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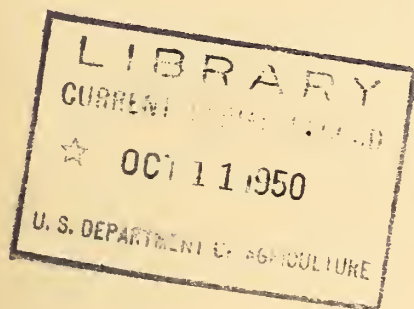


FOREIGN AGRICULTURE REPORT

OFFICE OF
FOREIGN AGRICULTURAL RELATIONS
U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C.



MARKET POTENTIALITIES FOR WHEAT AND WHEAT FLOUR IN THE FAR EAST



by

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ACKNOWLEDGMENT

The authors wish to express their appreciation to all officers of the United States foreign service in the different countries visited who cooperated so generously by making arrangements for conferences with appropriate government officials and members of the trade in the various countries, supplying data, and otherwise facilitating the progress of the investigation.

They also wish to acknowledge the valuable assistance rendered by Robert L. Gastineau, Leo J. Schaben, and other members of the staff of the International Commodities Branch, Office of Foreign Agricultural Relations, in outlining the project, supplying statistical and other background information, checking and editing the manuscript, and otherwise facilitating the completion of the survey.

FOREWORD

This study is a part of the general project assigned to the Office of Foreign Agricultural Relations under the Research and Marketing Act for the development of foreign outlets for United States agricultural products. This particular phase of that project was undertaken upon recommendation of the Grain Advisory Committee during its meetings in Washington, D. C., May 12-13, 1949. The Committee, at that time, recommended that a survey be made of market potentialities for United States grain and grain products, including grain sorghums, in the countries of the Far East.

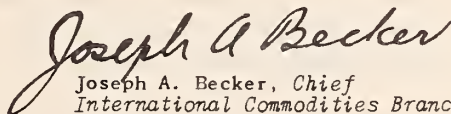
Acting on this recommendation, the Office of Foreign Agricultural Relations in cooperation with the State of Oregon Wheat Commission, and the Washington State Department of Agriculture, assembled a Mission to undertake the study. The working party included Henry A. Baehr, cereal chemist and Marketing Specialist employed by the United States Department of Agriculture, E. J. Bell, Administrator of the State of Oregon Wheat Commission, and A. M. Camp, wheat producer and President of the North Pacific Grain Growers.

Prior to the departure of the Mission, the OFAR assisted with funds supplied by the Oregon Wheat Commission, assembled all available information on the countries of the Far East. This information was prepared in the form of a handbook for background in making the investigation. During November and December, 1949, and January and February, 1950, the Mission visited Japan, Hong Kong, the Republic of the Philippines, Singapore, Malaya, Indonesia, Thailand, India, and Pakistan. Members of the party spent about 3 weeks in Japan, 3 weeks in the Philippines, 2 weeks in India, and about 1 week in each of the other countries.

The limited time available for an investigation of this type in an area as large as the Far East did not permit a detailed study of conditions in any of the countries visited. Through the courtesies of SCAP in Japan, the Embassies and Consulates of the United States in the other countries, local government officials, and representatives of American importing firms, however, the Mission was able to make at least a broadly comprehensive survey for each of the countries.

Mr. Baehr visited bakeries, mills, biscuit factories, noodle factories and other food processing plants in all of the countries. Mr. Camp, as a practical wheat producer, conferred with government officials and importers and is in an excellent position to report to wheat growers regarding his observations as to policies the United States must adopt in order to meet the requirements of commerce in the Far East. Mr. Bell was particularly interested in studying food habits and consumer preferences by visiting actual households so as to learn what the people themselves preferred in the way of food and how such food was prepared.

Possibilities for expanding foreign market outlets for a number of other agricultural commodities are being studied by this Office, and the results of such investigations are being presented in circulars and reports that may be obtained, free, from the Office of Foreign Agricultural Relations, United States Department of Agriculture, Washington 25, D. C.


Joseph A. Becker, Chief
International Commodities Branch

CONTENTS

	PAGE
INTRODUCTION	1
SUMMARY AND CONCLUSIONS	2
TRADE PATTERNS AND DISTRIBUTION	4
AGRICULTURE OF THE AREA	9
FOOD HABITS AND CONSUMER PREFERENCE	19
FOOD PROCESSING IN THE FAR EAST	28
POSSIBILITIES AND LIMITATIONS FOR UNITED STATES WHEAT AND FLOUR EXPORTS TO THE FAR EAST	34
STATISTICAL APPENDIX	39
Table 1. Foreign Trade of Specified Far Eastern Countries in Wheat and Wheat Flour, Average 1934-38	40
Table 2. Wheat and Wheat Flour Exports to Specified Far Eastern Markets from Argentina, Australia, Canada and the United States for Stated Periods	41
Table 3. United States Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods	42, 43
Table 4. Canadian Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods	44, 45
Table 5. Australian Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods	46, 47
Table 6. Argentine Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods	48, 49
Table 7. Changes in Average Daily Per Capita Calorie and Protein Value in Food Supply of Specified Far Eastern Countries and the United States, Prewar and 1947-48 and 1948-49	50
Table 8. Sources of Daily per Capita Calorie and Protein Intake in the Food Supply of Specified Far Eastern Countries and the United States Before World War II	51

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INTRODUCTION

In making a study of this nature, it was necessary that the members of the Mission place themselves in the position of prospective customers in the Far East, familiarize themselves with the conditions under which consumers live in those countries, and learn what kinds of food they really like, and how such food is prepared. It is only to the extent that we in the United States are able to appreciate the point of view of potential customers abroad and adapt our operations to take advantage of whatever consumer demand exists, that we can hope to expand our foreign outlets for grain and grain products.

Before the Mission left the United States there were a number of questions which could not be answered adequately from available information. It was not clear, for example, as to just how meals were usually prepared in the Far East, although it was known that fuel for cooking was extremely limited. It was known that many people in the Orient depended primarily upon boiled rice for the bulk of the calories in their diet, and there had been some discussion of the possibility of treating wheat and other grains so that they could be cooked like rice. But since it was not clear as to exactly what particular kinds of wheat products were preferred by the people in that area, it was desirable to see at first hand just what kinds of grain and grain products were best suited to make the products which consumers there like to eat.

It was felt that more information was needed on consumer habits and preferences among different income groups and social levels, and on the nature and adequacy of domestic marketing facilities. Additional first-hand information was needed also on how the economic policies and programs of the various governments affected the price, supply, and demand for grain and grain products. More information was needed also on the underlying reasons for such policies and programs, and on the reactions of the people toward prevailing conditions.

GENERAL PATTERN OF FAR EAST WHEAT AND FLOUR TRADE

The average (1934-38) level of imports and exports of wheat and wheat flour into and from all of the countries of the Far East is shown in Table 1. (See Statistical Appendix.) A substantial portion of the wheat and flour imported into that area in that period consisted of wheat or flour that originated in or was milled in India and Japan. A considerable volume, however, also came from the traditionally large exporting countries of the United States, Canada, Australia, and Argentina. Exports of wheat and wheat flour to specified countries in the Far East from these four overseas exporting countries before and after World War II are shown in Tables 2, 3, 4, 5, and 6. (See Statistical Appendix.)

The population in the Far East has increased by more than 100 million people since before the war and the supply of rice has not increased in proportion to the population. Since some of the countries have been importing grain and grain products in unusually large quantities during recent years, one of the objectives of the Mission was to determine the extent to which such imports represent a temporary market demand, and the extent to which they represent a permanent change in dietary habits.

As is quite well known, there was a tremendous expansion in United States wheat exports after the war, and our markets in the Far East shared in that expansion. The reasons for the greatly increased exports to the Far East are well known; namely, the dislocations of war, increasing population, and a shortage of rice. Total exports of wheat and flour to that area from the four principal exporting countries (United States, Canada, Australia, and Argentina) increased from a prewar average of less than 45 million bushels per year to a total of nearly 170 million bushels during the marketing season ended June 30, 1949. (See Table 2.) Of those totals, United States exports of wheat and flour amounted to only 6 million bushels annually in the prewar period but reached 104 million bushels during 1948-49. (See Table 3.)

ESTIMATED IMPORT REQUIREMENTS IN 1949-50

The estimated import requirement of wheat for this group of countries during the current (1949-50) marketing year is about 150 million bushels. Our wheat and flour exports to the Far East during the current year are expected to range between 75 and 100 million bushels. While it is to be expected that the total import demand for wheat and flour in Far Eastern markets will decline from the abnormally high level of recent years, indications are that it will continue well above the prewar level. It should be pointed out, however, that the Far East is a market for which there will be increasing competition in the years ahead - especially in the absence of recovery or relief programs such as are now available for countries of western Europe.

Secondly, opportunities for U. S. trade with countries of the Far East, historically and in prospect for the future, are relatively more favorable than for other areas. The United States in the past offered and probably will continue to offer a good market for what might be called "painless" imports of such commodities as rubber, silk, tea and spices, strategic minerals, etc., from the Far East. In addition to such normal commercial trade opportunities, there is now evidence of increasing concern on the part of several governments in that area regarding the dietary levels of their population.

Finally, while the wheat surplus problem is not confined to any particular area in the United States, the Far Eastern market does offer an outlet for wheat from the important surplus producing areas of the Pacific Northwest. For example, approximately 70 million bushels of the 1948-49 U. S. wheat and flour exports to the Far East moved from the Pacific Coast.

SUMMARY AND CONCLUSIONS

If the United States is to maintain its present position in the wheat and flour trade of the Far East, it must have first hand information on the various factors likely to influence the future level of demand in the markets of those countries. It

was with this objective in mind that the Grain Advisory Committee, functioning under the Research and Marketing Act, authorized an on-the-spot investigation by the Far East Grain Mission of market potentialities in that area. As a result of that investigation, the Mission offers the following general comments:

1. The Mission finds that there are definite opportunities for the sale of wheat and flour in the markets of the Far East. Whether the United States is to supply that market depends upon whether we are able and willing to meet the necessary conditions. The Far East will continue to import wheat and flour in larger quantities than prior to World War II, even though imports by some countries will be less than the abnormal requirements of recent years. Japan and India are the principal importers of wheat. Hong Kong, the Philippines, Malaya, Indonesia, Thailand, and Burma are importers of flour. Under competitive conditions, there may be a small market for imported flour in Japan. Before the war, China, Korea, Formosa, and Ceylon imported both wheat and flour. Ceylon, in particular, has increased its imports in recent years.

2. Participation by the United States in this potential market will depend primarily upon the extent to which our wheat and flour exporters will be able to meet prices of other exporting countries. Under present policies and procedures, the United States is pricing itself out of that part of the Far East market which is outside the International Wheat Agreement, except, of course, the Japanese market which is now largely supplied on the basis of funds appropriated by the United States. A price differential of as little as 5 to 10 cents on a 50-pound sack of flour is a serious obstacle, especially when multiplied by 3 to 20 times in terms of local currencies.

3. Full realization of the potential market for wheat depends upon easing monetary difficulties and removing import quotas, milling regulations, and other trade restrictions. Such restrictions limit wheat and flour imports below the quantities which consumers would buy if more were available to them. Existing milling regulations, which adversely affect flour quality, make the bread unpalatable to many consumers.

More important still, some countries refuse to make dollar exchange available to their flour import trade and give a monopoly to millers in a particular exporting country. This lack of competition often results in delivery of flour of inferior quality. In many cases, flour is out of condition when it arrives at the bakery. Bakers very much prefer to have access to flour from all exporting countries on a competitive basis so they can purchase flour of proper quality for each type of baked goods. If this were possible, bakers believe that consumption of wheat flour would be substantially increased and that consumers would be better satisfied.

4. It is equally important that people in the United States recognize that international trade is a two-way street. We cannot sell wheat, flour, or other products in the Orient unless customers there have dollars to pay for them. The only way people in foreign countries can earn dollars is to sell their goods and services in the United States and other dollar countries. To the extent that we close our markets to their products, we force those countries to trade elsewhere. This not only limits the opportunity for our exporters to make profitable sales, but also obliges friendly nations to make other trade alliances.

5. Brands of flour are highly important in the Orient. It is, therefore, necessary that millers in the United States have an opportunity to offer their brands of flour on a competitive basis.

6. The Far East cannot be considered a "dumping ground" for inferior products. Consumers there are extremely selective in their food tastes. This is especially true in the case of supplementary foods like rolls, bread, sweet crackers, pastry, and cake. With the possible exception of India and Pakistan, the people almost universally prefer white bread and do not like dark bread made from long extraction flour. This is particularly true of those who have been accustomed to a diet of white rice. It is highly essential, therefore, that wheat and flour of suitable quality be delivered regularly and in good condition.

7. There is a slow but gradual upward trend in the demand for wheat products on the part of consumers in the Far East. It is not expected that wheat will take the place of rice, which undoubtedly will continue to supply the bulk of the calories in the diet of most of the people. Consumers, however, want more variety in their meals and many of them can afford wheat products, which are relatively inexpensive. Many consumers have become accustomed to serving rolls or bread for at least one meal a day. The Japanese and Chinese people have long been in the habit of eating wheat noodles. Chapatti and related products have been eaten in Northern India for centuries, and their use is spreading to other parts of that country. Sweet biscuits, cakes, and pastries are served by many Orientals with their afternoon tea and coffee. As more and more consumers become acquainted with wheat in these and other forms, the demand for it should increase, even when rice and other staple foods become more plentiful.

8. The trend in most localities is in the direction of small bake shops in the population centers and villages. Wheat is not generally prepared in the home except in the form of noodles, steamed bread, chapattis, and similar dishes, which can be cooked with a limited amount of fuel. Fuel for cooking is extremely scarce everywhere in the Far East. For this reason, boiling, frying, broiling, and other forms of camp cookery, rather than oven baking, are used in practically all homes.

9. Boiled whole or cracked wheat does not taste good to people in the countries visited and there is apparently little or no possibility of expanding its consumption in that form. Neither is there any taste preference for corn or grain sorghums. The people in the countries visited very definitely prefer white rice, and when they cannot get enough rice, wheat is their next choice. Other cereal grains are looked upon as inferior foods and are not eaten when rice or wheat are available.

TRADE PATTERNS AND DISTRIBUTION

Prior to World War I, imports of wheat and wheat flour into southeastern Asia were relatively small although there was a growing demand in the Philippines and a number of other countries. For many years China had been an important market for wheat and flour from the Pacific Northwest. Japan was a substantial importer of wheat which was milled into flour for export. In addition, Japan had a local production of around 50 million bushels of wheat and her average consumption was around 45 million bushels, principally in the form of noodles and okashi (sweet biscuits, pastries, etc.). India imported a very small quantity of wheat, and small amounts were imported also by Formosa, Korea, Burma, Ceylon, and Malaya. By and large, however, with the exception of China, Japan, and India, importation into southeastern Asia before the war was mainly in the form of flour. China was an important importer of flour as well as wheat. Total net imports of wheat and flour by Far Eastern countries averaged 33,425,000 bushels during the period 1934-38. (See Table 1.)

RECENT TRENDS IN WHEAT AND FLOUR IMPORTS

Since World War II, imports of wheat and flour into the Far East have been much greater than they were before the war. These increases have come about because of increased populations and the reduction in available supplies of rice from the rice exporters. Japan, which previously depended primarily upon imports for its rice requirements, could no longer obtain supplies from Formosa, Korea, and Thailand. As a result, it was necessary for the American Occupation Forces to supply substantial quantities of wheat to Japan because rice could not be obtained and wheat was not only available but also the cereal of second choice. India also has become an

important importer of wheat because of a large increase in population, and the difficulty of obtaining adequate supplies of rice.

Flour imports into the other countries of southeastern Asia have been increasing in recent years as a part of a general trend in consumption patterns. Contact with the American Army and others during the war, gave many people a taste for bread, rolls, and other wheat products. Hot dogs, hamburgers, soft drinks, candy bars, and chewing gum have followed in the wake of the G.I. troops. Thus, net imports of wheat and flour into southeast Asia, which averaged around 47 million bushels during the prewar period, jumped to nearly 170 million bushels during the 1948-49 marketing year. (See Tables 1 and 2.)

Before the war, only around 6 million bushels of this trade were supplied by the United States, but more than 100 million bushels were supplied by the United States during the marketing year 1948-49. (See Table 3.) A large portion of this increase, however, is represented by Army shipments to Japan and purchases by India. Indonesia, which obtained most of its flour supplies from Australia before the war, has purchased most of its flour from the United States in recent years, using ECA funds made available through the Netherlands.

The principal purpose of this investigation was to determine the extent to which the demand for wheat and flour could be expected to continue under more normal trade conditions and the conditions under which the United States could participate in whatever demand there might be for these and other grain products.

WHEAT VERSUS WHEAT FLOUR IMPORTS

The development of a market for wheat and wheat flour in the markets of the Far East has resulted to a large extent from the association of those populations with European and American elements. In general, the initial development of a milling industry in any part of the world accompanies the production of wheat, and where the flour requirements of a population exceed domestic wheat production the usual tendency is for the milling industry to keep pace with the demand for flour by importing wheat. In view of the fact that wheat growing is impracticable in many areas of the Far East, the absence of a milling industry in such areas is a logical economic consequence. In most of the Far East, the relative economics of flour imports versus local milling of imported wheat favor the former. As a result, Japan, India, and Pakistan have substantial milling capacities, while the other countries visited have none and remain as flour importers. Despite an interest in some countries in altering this situation, the economic factors will probably operate to continue the present flour import pattern.

Because of climatic factors, great care must be taken to preserve the condition of the flour shipped to those countries. This means that delivery to the bake shop must be frequent, and that stocks of flour must not be permitted to accumulate at any point in the distribution system. In the Philippines, where flour has been imported for many years on a commercial basis, a distribution system has been developed whereby flour is "continuously coming," and efficiently distributed from ports of entry to consuming areas. In other countries, where the use of flour is not so general, there have been many instances where cargoes were piled up on docks or stored in "godowns" (warehouses), until it was impossible to make any palatable product from it.

There is a definite taste preference on the part of large numbers of people in the Far East for wheat products to supplement other items in their diet. With the exception of India and Pakistan, the preference is for bakery products made with white flour. Small bake shops are found in all parts of the Philippines and Japan. With more adequate and efficient distribution of flour, it would be possible for the number of bake shops to be increased in Indonesia, Malaya, Thailand, Burma, and several other countries. India and Pakistan, on the other hand, consume wheat in the form of chapattis and similar products. A chapatti is a flat pancake made from finely ground wheat meal without shortening or leavening and cooked on a flat iron plate or stone.

WHEAT VERSUS RICE

It must also be remembered that wheat on the world market has been cheaper than rice during the postwar period. Under the International Wheat Agreement's maximum price of \$1.80 per bushel, wheat costs 3 cents per pound, whereas the average export price of rice at approximately 112 American dollars per metric ton, is equivalent to 5 cents per pound. After the wheat has been milled into flour, shipped to the consuming areas, and baked into bread, it becomes somewhat more expensive than rice. Price relationships are extremely important in the Far East. A country like India, where whole wheat can be delivered to consumers, is inclined to import wheat rather than rice under present conditions because the wheat is cheaper and is more available. However, with greater availability of rice in the Far East, and contingent upon the resumption of normal trade with Burma and Indochina, we can expect that India will increase its rice imports rather than attempt to maintain a high level of wheat imports.

Not only is it important that wheat be available at prices comparable to the price of rice, but it is also highly important that wheat and flour from the United States be available at prices competitive with the wheat and flour from other exporting countries. During the fall and winter of 1949-50, Canadian flour was offered in the Philippines at lower prices than flour from the United States and there was an immediate shift on the part of bakeries, even though previously they had been accustomed to brands of flour from the United States and would have preferred to buy United States flour if it could have been obtained at comparable prices. Once they become accustomed to Canadian brands, considerable effort and expense will have to be incurred in order to effect a return to American brands, even if United States flour is offered at comparable prices. This same general principle is equally true in all of the countries visited.

Availability of rice supplies has a very definite effect upon the whole economy of that part of the world. Any appraisal of the trade pattern of southeastern Asia must take into account the movement of rice. Wheat, in many localities, will be a supplemental food rather than a direct substitute for rice.

Prior to World War II, Thailand, Burma, and Indochina exported around 6 million metric tons of rice annually. Since the war, their available supplies have been materially reduced and it seems likely that those three countries will have no more than 3 million metric tons for export in the immediate future. This means that the other countries in that part of the world must supplement their own food supply with



FIGURE 1. Wheat, cotton, and wool being sold at market in Pakistan. West Pakistan is an exporter of these commodities. The wheat is soft white, excellent for making chapattis, cake, sweet biscuits, and other pastries.



FIGURE 2. Camel carrying wheat to market in Pakistan. Most villages in the west Punjab produce more wheat than they need. The extra wheat provides cash income. It is hauled to local marketing centers on camels or in bullock carts.



FIGURE 3. Bakery shop in Bangkok, Thailand.

imported grains, and wheat is clearly the first choice after rice. In each of the countries visited it was found that every effort is being made to increase the local production of rice. In much of the area, however, there will still be a strong demand on the part of consumers for wheat products as supplemental foods, even though they are able to reduce their dependence upon imported rice.

RELATION OF DOLLAR EXCHANGE TO PURCHASES FROM THE UNITED STATES

The question is frequently raised as to whether or not countries in the Orient will have sufficient dollar exchange to purchase imported food. That part of the world normally has a large number of commodities which are exported to the United States and other dollar countries, and it is entirely possible that with proper trade relationships the volume of our export trade to the Far East could be materially increased. Everywhere one goes in the Orient, however, there is talk of a shortage of dollars. This indicates that there are many things which are highly prized by the people in those countries but which can be purchased only with dollars. Furthermore, the United States dollar represents a stable currency. Any person in the Orient with money to invest exerts every effort to obtain dollars to the extent that they are available.

Another problem affecting the availability of dollars is the existing exchange regulations, particularly in Malaya and other countries in the sterling area where dollar exchange has been used in the general financing of the British Empire, and is not available for purchases from dollar areas of commodities needed locally. As a specific example, bakers in Singapore would very much like to have permission to purchase United States flour with some of the dollars obtained by exports of rubber and tin to the United States. This is not possible under existing regulations which give a monopoly of the Singapore flour market to Australian millers.

As a general principle, it might be stated that the countries in the Far East do have commodities for sale; that they will sell those commodities wherever they can; and that the currencies obtained by such exports will be used in purchasing the things they need or want. If they are not able to sell their commodities in the dollar area, they will sell them somewhere else. Therefore, the extent to which they are able to purchase United States wheat and wheat flour and other products in the future will be determined substantially by the volume of their exports to the dollar area.

FAR EASTERN EXPORT SURPLUSES

What then do countries in the Orient have for sale, and to what extent can they export such goods and services to the United States?

Japan is the principal manufacturing country in that part of the world. It has a well-developed manufacturing industry and a very industrious people who take pride in their craftsmanship. Exports are vital to the prosperity and well-being of the Japanese because enough food cannot be produced on the Japanese islands for the country's 80 million people. The principal exports of Japan are textiles, including silk, cotton, and woolen goods; iron and steel products, including machine tools, engineering equipment, etc.; precision optical instruments; toys; pottery; and chemi-

cals. Before the war, fish was also an important export item. Prior to the war, its most important single source of dollar exchange was derived from the export of silk to the United States.

The Philippines export sugar, coconut products, abaca (manila hemp), tobacco and lumber (chiefly mahogany, teak and other valuable hardwood), iron ore, manganese, chromite and other minerals. Malaya exports rubber, tin, gold, bauxite, iron ore, gambier, and tobacco. Indonesia exports sugar, rubber, copra, palm oil, tea, coffee, tobacco, spices, petroleum, 90 percent of the world supply of cinchona bark, from which quinine is made, and 80 percent of the world exports of cassava, and tin.

Ceylon exports tea, rubber, and coconut products. Burma exports rice, petroleum, lead, wolfram ore, tin, silver and hardwoods. Thailand exports rice, tin, rubber, teak, gold, and wolfram ore. Indochina exports rice, rubber, corn, coal, tin, fish, cement, and tea. India exports jute, cotton, tea, oilseeds, hides and skins, wool, pig iron, tobacco, manganese, coal, and mica. Pakistan exports from East Bengal, jute, tobacco, and tea. From the West Punjab and other provinces in the west, it exports cotton, wheat, and oilseeds.

Grouped by sources, the major export commodities of the Far East include the following: *manufactured products* from Japan; *sugar* from the Philippines, Malaya, and Indonesia; *rubber* from Malaya, Indonesia, and Ceylon; *tin* from Malaya, Indonesia, Burma, and Thailand; *copra* and *coconut products* from the Philippines, Malaya, Indonesia, and Ceylon; *abaca* from the Philippines; *jute* from India and Eastern Pakistan; *manganese* from India and the Philippines; *spices* from Malaya, Indonesia, and Ceylon; *coffee* from Indonesia and Malaya; *tea* from India, Ceylon, and Indonesia; *cinchona bark* and *cassava* from Indonesia; *rice* from Thailand, Burma, and Indochina; *tobacco* from India, the Philippines, Indonesia, Malaya, and Eastern Pakistan; *cotton* from India and Pakistan; *cashew nuts* from India; *lumber* from the Philippines; *iron ore* from India, Malaya, and the Philippines; *petroleum* from Indonesia and Burma; and *wolfram ore* from Burma, Indochina, Korea, Malaya, and Thailand.

From the foregoing it can be seen that the Orient has a large volume of commodities for export, many of which have been and will continue to be exported to the United States. For the dollars thereby obtained they need, among other things, mining equipment, raw cotton, power dams, reclamation projects, and a great variety of United States manufactured products including cosmetics, automobiles, trucks, and tractors.

OTHER FACTORS AFFECTING TRADE

Other important factors affecting trade in many of the countries visited include the physical and economic uncertainties confronting producers because of frequent local political disturbances, and, in some of the countries, fear of aggression from external sources. Most of the countries in the Far East have new governments which are embarking upon efforts to establish representative democracies. Japan is attempting, with the help of SCAP, to develop a democratic form of government. On December 30, 1949, the Philippines inaugurated their first elected President. The United States of Indonesia obtained its independence and formed the new Republic on December 27, 1949.

The new constitution of the Republic of India became effective January 26, 1950. Thailand became a constitutional monarchy in 1932, and has had numerous changes of administration and in the wording of her constitution since that time. Burma and Indochina are torn by Civil war. The governments of Indonesia, Malaya, and the Philippines are coping with armed rebellion in varying degrees. Pakistan and India attained independent status and were partitioned in August 1947 but still have many serious difficulties which they hope to settle by peaceful means.

The first requirement in bringing about an expansion in the foreign trade of Far Eastern countries must be the attainment of political stability within their borders. If this can be done, and if sound fiscal policies can be adopted, it should be possible for firms and individuals in the United States to make profitable investments for much needed internal development. If, in connection with such investments, arrangements can be made for a more orderly and businesslike distribution of the export surpluses of those countries within the United States, there should be ample opportunity for expanding sales of United States products in those areas. In such an expanded trade, United States wheat and flour could have an important place.

AGRICULTURE OF THE AREA

Just as in any other part of the world, market potentialities for United States wheat and wheat flour in the countries of the Far East are influenced by a number of factors outstanding among which are the levels of indigenous food production, prices at which wheat and flour can be purchased from countries other than the United States, food habits and preferences of the people, and consumer purchasing power, especially in the large centers of population.

In the last analysis, the question of whether or not the people of the Far East will have the purchasing power to buy wheat and flour from the United States or from any other country is inextricably tied up with their ability to sell at a profit in foreign markets the surpluses of such agricultural and mineral raw materials and other commodities as they are especially adapted to produce. Lacking sufficient export markets for their surpluses, the only alternative to a continuation of the prevailing low levels of subsistence, measured by Occidental standards, is an expansion in food production at home.

FAR EASTERN FOOD PRODUCTION STILL UNDER PREWAR LEVEL

In that connection, food production in most Far Eastern countries has not yet regained prewar levels. In addition, population numbers are rapidly increasing. That food production in most Far Eastern countries could be greatly expanded is beyond question. Whether it can be expanded rapidly enough to keep pace with increasing population numbers and perhaps even allow for some improvement in the general level of food consumption, including an increased consumption of wheat and flour, involves far-reaching considerations. Included among such considerations is the degree to which they can bring about sweeping changes in production technique, land reform, land reclamation, expansion in irrigation facilities, increased use of fertilizers, increased use of modern agricultural equipment, and the introduction of better-yielding varieties.

Moreover, the entire question of expansion in indigenous food production in Far Eastern countries will be influenced in no small degree by the policies of their Governments. In a number of those countries, programs are already underway to bring about improvements in the diet of the people. Also, many of their Governments are exerting special efforts to bring about increased yields per acre and increases in the areas of land devoted to the production of food crops. The following brief picture of the role which agriculture plays in the national economies of the countries of the Far East serves to emphasize the relatively minor role of wheat, largely because of the unfavorable soil and climatic conditions, in the agriculture of most of the area.

In southeastern Asia, rice is grown on practically every acre that will produce the crop. On much of the land, rice will produce more food in terms of calories than any other cereal. The vast majority of the people live in villages and depend upon local production for their food supply. Rice can be cooked with a minimum of fuel. This is an important consideration in many Far Eastern areas where fuel is extremely scarce in relation to population numbers. Wherever rice cannot be grown, such other grains as wheat, millet, grain sorghum and barley are produced. Corn, potatoes, and sweet potatoes are also grown in many Far Eastern localities. Wheat has been the principal food in northern India and in what is now western Pakistan for centuries because it is better suited than rice to the soil and climate of that area. Wheat is also grown in Japan in rotation with rice. In addition to crops grown primarily for local food supply, many other commodities are produced for export, especially on plantations owned and operated by Europeans.

JAPAN

Although agriculture occupies a very important position in the national economy of Japan, individual farms are extremely small. Two-thirds of the farm households cultivate less than 2.4 acres each. The land is generally steep and mountainous, and only a small proportion is suitable for cultivation. At present, no more than about 16 percent of the total land area is under cultivation and no significant increase in cultivated land can be anticipated. Therefore, no matter how hard farmers try, expansion in food production has a natural limit. The existence of so many small-scale farms is due not only to the topography of the country but also to historical factors and social conditions affecting farming.

Another characteristic of Japanese agriculture is the fact that two successive crops of the same product are grown each year on a large part of the land. This is usually not true in the case of rice, but from 30 to 40 percent of the irrigated rice land is replanted to winter crops, such as wheat and barley, except in areas that have severe winters. Upland fields or unirrigated cropland, also are sown to more than one crop each year. On these fields the farmers generally have two or more crops in different stages of maturity at the same time. Such double and multiple cropping results in a difference in cultivated and harvested areas. For instance, in 1939 Japan's harvested area amounted to 19.9 million acres, or a third more than the land reported as cultivated.

Despite the unprecedented program of industrialization before World War II, agriculture remains the backbone of the economic life of Japan. Normally, it provided employment for more than 40 percent of the population and supplied about 85

percent of the nation's food. Since the war it has become even more important. Except for the shortage of fertilizer, Japanese agriculture is in a better position today than during the war, particularly with respect to labor supply.

The agriculture of Japan may be classified into food crops and industrial crops. Of the food crops, rice, wheat, barley, sweet potatoes, and white potatoes furnish from 85 to 90 percent of the calories in the Japanese diet from indigenous sources. Since early history, rice has been the most important product of Japanese agriculture. It accounts for 70 percent of Japanese staple food. Rice occupies approximately 53 percent of the total cultivated area, and about 42 percent of the total crop area. About 96 percent of the rice is grown on irrigated lowlands. Barley ranks second in importance, 14 percent of the arable land being devoted to that crop.

From a position of relative unimportance, wheat in recent years has become one of the major Japanese crops. Both acreage and yields have been greatly improved over the years.

For generations the sweet potato has been the national stand-by in periods of famine when August-September rains ruined the paddy fields. Sweet potato production is limited largely to an area south of 38 degrees north latitude, while white potatoes are grown extensively north of that line.

Industrial crops play only a relatively small role in the agricultural economy of Japan, covering around 5 percent of the total cultivated area in 1947. The industrial crops include sugar, fibers (silk, cotton, flax, hemp, jute, ramie, rush, and paperbush), oilseeds (flaxseed, rapeseed, and sesame) and others (pyrethrum, peppermint, tobacco, wax berries and tea). Pyrethrum, tea, tobacco, and silk occupy approximately 75 percent of the total area devoted to industrial crops. Sugar is not produced in any significant quantity in Japan proper.

Wheat, barley, oats, and rye as a group come next to rice in importance. Japanese wheat generally is of a type similar to our soft red winter class, starchy rather than glutinous. Glutinous wheat must be imported. While some wheat is grown in every prefecture of the country with barley or rice, most of the wheat acreage is concentrated in the southern prefectures of Japan proper and on the island of Kyushu. Wheat is subsidiary to rice, being winter grown when land for rice is idle. It does not compete with rice for the land, and where an expansion of double cropping is possible, the crop could be increased within limits.

Most of the Japanese wheat crop is sown late in the autumn. It is grown in small patches, sometimes distributed among vegetables and barley crops. Most of the work, including harvesting, is done with hand implements, and cultivation is extraordinarily intensive. The grain is sown in rows, not broadcast. Night soil and chemical fertilizers are used. Wheat must be harvested in late May or early June, partly to avoid the Japanese rainy season, and partly in order that the land may be ready for rice at the proper time.

REPUBLIC OF THE PHILIPPINES

The Philippine Republic is primarily an agricultural nation. About 35 million acres, or half the total land area, are suitable for agriculture, although only 10

million acres are under cultivation at present. Most of the farms are small. The 1939 census reported that about half of the 1,634,726 farm units were under five acres. Notable exceptions are the large landed estates, founded generally by royal grants during the Spanish occupation.

Hand methods and tools are used very largely in the cultivation of most crops except sugar cane. For the latter, some of the most modern methods are used. The small-size farms in the thickly populated areas are not conducive to the use of power equipment. Some work cattle are found in the dry land areas while water buffalo furnish the power needed to plow and prepare the rice lands. The rice and sugar lands are often worked by tenants and an improved condition of land tenancy is badly needed. In 1940, sugar constituted the most important export from the Philippines. This was followed by coconut products, Manila hemp, and tobacco.

Before the war, the sugar industry was the most important export industry, depending on free trade relationship with the United States to a greater extent than any other industry. This gave Philippine sugar a preferential position in the American market. The volcanic soils and climate of Negros and central Luzon provide ideal conditions for growing sugar cane. About 950,000 short tons valued at almost \$50 million were exported to the United States annually. The sugar industry was hard hit by the war, but it has now recovered to the point where an estimated 650,000 tons may be exported from the 1949-50 crop.

The coconut crop was the least affected by the war, and copra has been exported in greater quantities and at higher prices in recent years than ever before. This is due to the high postwar world prices for copra. Coconuts are grown on the sandy coastal plains and up the hillsides to an elevation of about 1,000 feet. Exports of copra plus the copra equivalent of coconut oil amounted to 695,000 long tons in 1948. In 1949, exports amounted to 660,000 tons. The coconut industry is expected to retain its postwar position as the first export industry. Average prices, however, are expected to be lower.

Abaca (manila hemp) is raised on the moist eastern slopes, especially in Mindanao. The Davao-Mindanao area produces 35 to 45 percent of the total crop in normal years. Abaca is important also in Southern Luzon, Leyte, and Samar. Abaca and its products occupied third place in the country's exports in 1949. It was believed that there would be a slight reduction in abaca production in 1949, but that the proportion exported as rope would be higher. Since the market for abaca showed no sign of weakening, indications were that the value of the exports would approximate that of 1948.

Canned pineapple exports in 1949 were expected to treble in value those of 1948. Tobacco is another important Philippine export crop. A scarcity of dollar exchange in Mediterranean countries, however, continues to be a handicap to the export of leaf tobacco to the important European markets. Livestock recovery is proceeding slowly, but at least three or four years will pass before prewar per capita consumption of livestock and meat products is reached. The Government is aiding the rehabilitation of the industry by the importation of animals from Asia.

The granary of the Philippines is located in the Central Luzon Plain, which stretches north from the Bay of Manila. This plain, about one hundred miles long and up to seventy miles broad, normally produced a surplus of over 11 million cavanese

(one cavan equals 2.8 bushels) of palay (unmilled rice) before the war. To travelers during the monsoon season, this region is a sea of green. The 1948-49 output of rice was estimated at about 55 million cavanese of palay, the best crop since liberation. The Republic has now reached its prewar position as a rice producer and production is expanding.

The production of corn is second only to rice among the grains. Corn is the principal foodstuff of about one-third of the population. It enjoys widespread consumption in the northeastern sector of Luzon and in Batangas. There is also a heavy consumption of this cereal in the Visayan Islands, which lie to the south of Luzon. In area planted, corn is the third ranking crop of the Islands. Very little wheat is grown in the Philippines at present, since the production of this grain apparently does not fit in with the prevailing climatic conditions as well as other food crops that can be grown.

MALAYA

Malayan agriculture may be divided into two types, (1) estates with 100 or more acres, and (2) small holdings ranging in size from a fraction of an acre up to 100 acres. Most of the estates are owned by public companies or private syndicates, while the small holdings are owned mainly by peasant farmers among whom Malays predominate with smaller numbers of Chinese and Indians. Of the total cultivated area of approximately 5,400,000 acres, estates comprised some 2,300,000 acres, or just under two-fifths of the total, and small holdings 3,100,000 acres, or just over three-fifths. The major Malayan crops include rubber, rice, coconuts, palm oil, and pineapples. An area of 278,000 acres, or 5.5 percent of Malaya's 1938 total crop acreage, is devoted to minor or secondary crops, such as tea, sugar, coffee, spices, gambier, tobacco, and various fruits and vegetables.

Rubber is the most important agricultural commodity produced in Malaya and the general trend of the economic well-being of the country is closely associated with the market price of that commodity. During 1948, rubber production in the Federation of Malaya reached an all-time record of 697,000 tons of which 403,000 tons were produced by estates and 294,000 tons by small-holders. In spite of "terrorist" activities, which might have caused the complete collapse of organized production, rubber production in 1948 was larger than in 1947.

In contrast with Ceylon, India, and various other Far Eastern countries, Malaya's coconut industry is concerned mainly with the production of oil and copra. Little if any attention is devoted to the production of desiccated coconut, charcoal, and similar coconut products. The area in coconuts today is considerably smaller than before the war. During the war, large areas were destroyed or were lost through neglect.

Palm oil production is confined almost entirely to the large estates. These estates, as part of their rehabilitation program, have been carrying out new plantings since the reoccupation of the country. In many cases, the estates have been completely rehabilitated. Approximately 60,000 acres were devoted to pineapples in prewar years in Malaya. At the time of the reoccupation, only 3,000 acres of pineapple were in bearing, but the industry is being rehabilitated and improved.

Prior to the war, Malaya produced slightly more than one-third of her total rice requirements. In 1940, locally grown rice amounted to 335,000 tons milled basis, or

35 percent of that year's consumption. Rice was grown on some 800,000 acres. The major producing areas are in the northern states of Kedah, Kelantan, and the Krian district of Perak. Rice cultivation is confined almost entirely to Malay-owned small holdings ranging in size from 2 to 7 acres. Since the war, the Government has taken an active part in stimulating rice production. This has resulted in acreage above prewar levels and a total production exceeding that prior to the war.

INDONESIA

Rice is by far the most important food crop of Indonesia. The only other grain of any significance in the agriculture of the country is corn, the second most important staple in the diet of the Indonesian natives.

The agriculture of Indonesia can be grouped into small-scale native farming and large-scale plantation farming under European management. Practically the entire output of the plantations is for export. That of the native farms is for both domestic consumption and export.

Agriculture is the principal basis of the Indonesian economy, more than 70 percent of those in recognized trades being engaged in agriculture. The principal prewar food crops were rice, corn, cassava, sweet potatoes, peanuts, and soybeans. The commercial crops include sugar, rubber, copra, palm oil, tea, coffee, tobacco, pepper and other spices, kapok, cinchona (quinine), hard fibers, and citronella oil.

The production of the main food crops is almost entirely in the hands of the native population. On the other hand, the commercial or export crops are produced both on plantations and by native farmers. Of the 10 million acres under commercial crops before the war, about 3 million acres were on estates or plantations, and the balance native grown. Estate production predominates for such commercial crops as rubber, tea, sugar, leaf tobacco, oil palm, hard fibers, and cinchona. Native production of commercial crops is concentrated mainly on rubber, copra, pepper, essential oils, kapok, coffee, and tobacco.

Rubber is grown chiefly in Sumatra. Plantation trees yield more rubber than those of native gardens, but the total output of the native plantings is almost as great as that of the plantations. The reason is that the natives plant more than three times as many trees per acre as do the plantation operators. Both native and estate rubber production have increased considerably in the past year, but production still has not reached prewar levels.

Tea has been cultivated in Indonesia for more than a century. Three-fourths of the crop is produced in Java and the remainder on the east coast of Sumatra. Until political stability is attained, rehabilitation of the tea industry will be retarded. Sugar cane is one of Indonesia's oldest and best-known crops and until the 1930's it was the most important export crop. Progress toward recovery since the war has been adversely affected by the prevailing political instability.

Before the war, Indonesia produced on the average around 1,477,000 short tons of sugar (raw value) per annum. The prewar importance of that crop in the country's export trade is evidenced by the fact that sugar exports then averaged around 1,213,000 tons annually. Since the end of the war, both production and exports of sugar have been far below prewar levels.



FIGURE 4. Charcoal being prepared for sale at Bangkok. Fuel for cooking is extremely scarce in Southeast Asia.



FIGURE 5. Making a chapatti in a Pakistan village. The chapatti is the traditional food of northern India and west Pakistan where wheat has been grown for centuries. This villager is shaping one chapatti in the traditional manner while another chapatti is cooking over a fire in which cotton stalks were used as fuel.



FIGURE 6. A chapatti being turned by an extension nutritionist at Women's Christian College, Madras, India. She uses a charcoal burner.



FIGURE 7. A hand "chakki" or grist mill in Pakistan.

Before the war, Indonesia was second only to Africa as a producer of palm oil. Production was resumed at the beginning of 1948 and by the end of the year reached about 25 percent of the prewar level. During 1949, production rose to more than 50 percent of the prewar level. For many years Indonesia ranked among the leading tobacco producing and exporting countries of the world. Just before the war it followed the United States, India, China, and Soviet Russia as a producer and was second only to the United States as an exporter.

Before the war, Indonesia was the world's largest producer of coconuts. Among the various crops of the Islands, coconuts play an important role as a food crop and an export product when converted into copra and oil. Good progress is being made in the restoration of the industry. Coffee was Indonesia's seventh most important export crop before the war and made up about 5 percent of the total volume of coffee entering international trade. During 1948, production was inadequate to meet domestic consumption, and hence, exports consisted only of the high-priced fancy grades. Nearly 90 percent of the world's supply of cinchona bark, from which quinine is extracted, is produced in Indonesia.

Cassava is the third most extensively cultivated food crop in Indonesia. Before the war, approximately 90 percent of the cassava produced in Indonesia was consumed locally, chiefly in the form of fresh roots. However, the remaining 10 percent made up 80 percent of the world's exports of cassava. Cassava is the principal root crop in Java. Its food value is less than that of cereals. In native households it holds a place somewhat similar to that of the potato in the United States. Recovery of the cassava industry has been rather slow.

Rice and corn are the only grains cultivated in Indonesia. There may be occasional isolated patches of other grains, but they do not enter into the trade of the country. Before the war, Java produced not only enough rice and corn for its own population, but was able to export quantities to deficient areas in the Indonesian Archipelago. South Celebes, Lombok, and Bali have always produced enough and often a surplus, but other regions, such as Sumatra's East Coast, the Riow Archipelago, West and East Borneo, Menado, and the Moluccas, never produced enough rice for their own need. Nevertheless, the Islands as a whole were self-sufficient in the production of grains before the war, and it is likely that if the economic link between the Dutch and Republican territories were once restored, there might well prove to be a surplus of rice in the Archipelago as a whole.

On Java and Madura there are about 20 million acres of cultivatable land for native agriculture. Of this, about 10 million acres are suitable for rice, and most of that area is planted every year. About 85 percent of the rice area is lowland irrigated rice and 15 percent is upland unirrigated rice. Corn is one of three staples which form the bulk of the native Indoensian diet, the other two being rice and cassava. Corn is grown in Indonesia as a "second crop," which means that it is cultivated for short periods of two or three months on land which is devoted to rice during the balance of the year. Under this system of cultivation, rice is the important crop. If, for example, the corn is not ready for harvesting by the time it is necessary to plant the rice, it is cut and used as a cattle feed. Nothing is allowed to interfere with the planting of rice on schedule.

THAILAND

Thailand, with an area of 200,000 square miles, is somewhat smaller than the State of Texas. While its population of about 18,000,000 is approximately $2\frac{1}{2}$ times that of Texas, the country is not considered a densely-populated area by Asian standards. Less than 10 percent of the total area is under crop cultivation. Of that area, more than 90 percent is devoted to rice production. Approximately 70 percent of the total area is forest and timber, which make an important contribution to the economy of the country.

Although tin, rubber, timber, and other natural resources are important in the economy of Thailand, the predominating source of the country's national wealth is agricultural production, more specifically the production and export of rice. The normal position of Thailand with respect to rice is analogous to that of the United States with respect to wheat. In both instances, acreage and average production per acre are sufficient to insure an adequate domestic supply with a large tonnage available for export. The production of rice has increased in Thailand since the end of the war to somewhat above prewar levels, but the tonnage exported in 1949 was only 92 percent of the prewar average. The reduced proportion of the total crop moving into export channels results from the greater food requirements of an increasing population without a compensating increase in acreage.

The climate and topography of the country lead naturally to rice culture, with the result that in any projected increase of agricultural production, increased acreage and yield per acre of rice are dominant considerations. In view of the current rice shortage in the world, and with rice production and consequent export from Burma and Indochina limited by internal political and ideological conflicts, Thailand anticipates profitable markets for her rice exports for several years.

While the average population density, in relation to arable land, is not immediately critical, the population increase indicates the need for expansion of agricultural production. In such an agricultural expansion program, emphasis on all aspects of rice culture can be expected. However, diversification in foods for domestic consumption and increased agricultural production for export are receiving serious consideration.

BURMA

Burma is the world's leading exporter of rice. About two-thirds of the country's cultivated acreage is devoted to the production of that grain and it is the main constituent in the diet of the Burmese. Minor quantities of maize, millet, and wheat are also produced.

Burma is predominantly an agricultural country with 65 to 70 percent of her population engaged in agriculture and many more in auxiliary industries. Rice is the foundation of the country's economy, and accounts for approximately two-thirds of the total area under cultivation.

The crops next in importance in the Burmese economy include groundnuts (peanuts), seasmum, and cotton, which together account for approximately 16 percent of the total land under cultivation. Next in importance come vegetables, pulses, maize, millet,

wheat, sugar cane, rubber, and tobacco. With the insignificant exception of millet and wheat, which show slight increases, none of these crops has been restored to the prewar level of production, but gradual progress in that direction is being made.

INDIA

Food grains are the most significant item in the agriculture of India, occupying over four-fifths of the country's crop acreage. Domestic production satisfies all but about 10 percent of the country's requirements of food grains. About 75 percent of India's population draws its subsistence from the land. However, migration to the towns is taking the more aggressive and enterprising young rural people off the farms. Farm conditions must be improved in order to halt this trend. In general, Indian agriculture may be characterized as follows: (1) the scale of production is small; (2) capital is meager; and (3) technical skill in the Occidental sense is almost totally lacking. These factors must be corrected if India is to progress to a state of self-sufficiency in the production of food grains, one of the country's primary objectives.

The average Indian farm is small and scattered over several plots. A five acre farm might be located in five different plots scattered over several square miles. This is one reason for the low average yields of most crops in India. The yields of the major Indian crops are among the lowest in the world. The reasons for this fact include poor farm practices, absence of adequate fertilization, and unfavorable weather conditions. Even on reclaimed land, yields have proved to be very low. There are few if any large wheat farms, such as those in the western United States.

Prepartition India produced around 65 million long tons of food grains and pulses of which around 27 million were rice, 10 million wheat, 7 million grain sorghums, 8 million millets of various kinds, 5 million corn and barley, and 8 million gram and other pulses. Most of the rice is grown on the Ganges Plain and along the southeast coast. Most of the wheat is in the Punjab and the United Provinces. Most of the corn, barley, and pulses are in the Punjab and the upper Ganges Plain, and most of the grain sorghums and millets on the Peninsular Plateau.

The partition reduced India's cotton acreage by 22 percent and production by about 40 percent, and left India with only a small proportion of the land that yielded the better quality cotton grown in prepartition India. In the early part of 1948, it became evident that cotton production plus expected imports would not meet domestic requirements. Therefore, exports were prohibited, except for some types of short staple cotton, of which there was a surplus in the country. Before the war, the United States bought 50,000 to 100,000 bales of short staple cotton annually from India.

India has long been the world's most important producer of sugar but sugar is of relatively little importance in the country's export trade. Excluding Pakistan, total production before the war averaged 5,369,000 tons annually. In 1949, production amounted to 5,492,000 tons. In what is now Pakistan, prewar sugar production averaged 799,000 tons. In 1949, it amounted to 1,159,000 tons. (The sugar production figures are in terms of "gur", a low grade of brown sugar.)

Tea is another important crop in India. During 1949, India exported 491 million pounds of tea. This was more than half of the world's total exports that year of 950 million pounds.

After partitioning, India was left with only about one-fourth the area that had been used formerly for growing jute. Increased production is being encouraged and over one million acres were planned for 1949. Output of jute in India is to be increased by increasing the yield per acre through the use of seeds of improved strains, by the application of proper fertilizers, and by acreage expansion. At present, India wishes to produce enough jute to supply all of its mills and also to satisfy non-mill domestic consumption. After India's own demands are satisfied, production may be further expanded for the export market. Most of the foreign demand for jute will be met by Pakistan for the present because jute can be produced there at a lower cost. There are no jute mills in Pakistan at the present time.

The separation of Pakistan on August 15, 1947, reduced the population of the Dominion of India by 18 percent, the area by 21 percent, and food grain production by about 25 percent. India lost its principal surplus food producing regions, Sind and the West Punjab, and has since faced in practically all provinces great deficit conditions which must be offset by imports. The principal grain deficit areas are Bombay, the southwest coast, Calcutta, and other cities of the 58, which in 1941 had over 100,000 population. There are minor surplus areas for certain food grains throughout India, especially in north central India.

Over four-fifths of India's crop acreage is in food grains. Production of the eight principal food grains in the year 1947-48 was officially estimated at 42.7 million long tons from 173 million acres. Of this tonnage, 18.8 million tons were rice and 5.3 million were wheat. The three principal millets supplied 9.6 million tons, barley 2.5 million, and corn 2.1 million tons. The remainder consisted of gram (beans, chick peas, etc.).

India has a considerable area which is sufficiently fertile for the production of food grains, but much of this land is not in use. The reason for this is a limited supply of water. The source of 90 percent of the rainfall is the southwest monsoon, lasting from June through September. In contrast to southeast Asia, the monsoon weather in India varies from year to year both in the time and in the amount of rainfall, making agriculture a "gamble on the monsoon." Irrigation is used for approximately one-fifth of the area under crops. The remaining four-fifths of the cultivated land is subject to periodic droughts and accompanying crop failures.

PAKISTAN

Pakistan is predominantly an agricultural country with the emphasis on grain. It is estimated that 86 percent of the land under cultivation is in cereals. The country as a whole may be regarded not only as self-sufficient in the production of grains but also as having a small surplus which can be exported, under normal conditions, to India. While western Pakistan is at present a surplus food area, eastern Pakistan is a deficit area.

The principal crops of Pakistan are food grains, primarily rice and wheat, and such cash crops as cotton, jute, tobacco and wool. The production of jute is of prime importance. It is estimated that approximately 65 to 75 percent of the total

world production of jute is concentrated in Pakistan, all of it in the province of East Bengal, or eastern Pakistan, which is separated by more than 1,000 miles from western Pakistan.

The annual production of cotton in Pakistan may be conservatively estimated at not in excess of one million bales, of which 75 to 85 percent is composed of American Upland varieties. Domestic consumption is not in excess of 150,000 bales. Eighteen yarn and textile mills were in existence in the country in January, 1950. When normal trade conditions are restored, India will take up to 500,000 bales annually of medium and long staple cotton from Pakistan. Aside from India, both Russia and Japan have shown considerable interest in Pakistan's cotton, and shipments to Russia at high prices have been noteworthy.

Tobacco is third in importance among the so-called "money crops," following cotton and jute. Production is almost entirely in eastern Pakistan and the crop represents about one-third of the tobacco grown in all of former India. The quantity produced is sufficient for domestic consumption. Tea is also produced almost entirely in eastern Pakistan. Approximately 42 million pounds are produced from 80,000 acres. Normally, 30 million pounds are exported. Production of oilseeds has been estimated at 245,500 tons from 1.7 million acres. In the absence of local crushing mills, the oilseeds are generally exported, but Pakistan hopes to remedy that situation in the future.

The importance of wool in any appraisal of Pakistan's economy is very real. The demand for carpet wool, particularly from the United States is great, and prices are not expected to recede much, if at all, as long as Pakistan's production remains below normal levels. Decline in production in Pakistan was caused by many factors, all due to partition.

Data from the Minister of Food reveal that a total of 35,319,000 acres were under food grains in 1948, with a total production of 11,950,000 long tons. Rice represented 21,036,000 acres with 7,625,000 tons, wheat 9,733,000 acres with 3,265,000 tons, and corn, millet, and barley 4,550,000 acres with 1,060,000 tons. Food grains, other than rice, are grown mainly in the irrigated areas of the Sind, Northwest Frontier Province, and the West Punjab in western Pakistan. Although some high quality rice is grown in western Pakistan, 88 percent of the total rice production is in eastern Pakistan.

Wheat is the staple food in western Pakistan, while rice occupies that position in eastern Pakistan. Although the agricultural position of western Pakistan is good in terms of food production and will probably be further developed and expanded in the more distant future, prospects in eastern Pakistan are not so favorable. The two areas should prove to be an interesting laboratory for studies of food habits, agricultural development, and nutritional levels in view of the desire of the Government of Pakistan to increase wheat consumption in the eastern area.

FOOD HABITS AND CONSUMER PREFERENCES

A market analysis looking toward expanding sales of any product must take into account the tastes, habits, and preferences of potential consumers. This is particularly important in the Far East because custom, tradition, and religion play such an important part in the lives of the people in that part of the world. Imported foods,

if they are to be accepted on a permanent basis, must fit into the established pattern. People do not eat just rice, noodles, fish, and vegetables. They eat meals consisting of one or more dishes. The preparation of meals and the cooking and seasoning of dishes served follow tastes, customs and traditions which have grown up through the centuries.

Nevertheless, food habits do change, sometimes with amazing rapidity, especially when new foods become available or when a people come in contact with other folk of a different cultural background. Under these circumstances it is often impossible to predict just what direction the change will take and the student of food habits, or the business man with food to sell, must be prepared to adjust his thinking to that of the consumer.

RICE THE PRINCIPAL ITEM IN THE FAR EASTERN DIET

The vast majority of the people in the countries visited have long been in the habit of eating white rice as the principal dish in their meals. They want white rice in the rice pot and are reluctant to put anything else in that pot. Once the rice is cooked, many eat it with highly seasoned curry preparations, although many eat the rice plain. When rice can be supplemented with other foods, the supplemental foods are prepared in characteristically Oriental ways and the people eat them as separate dishes.

People in the Far East eat the kinds of food which have always been locally available and which can be cooked with the least possible amount of fuel. Most persons in the countries visited live in or near the villages where they were born. Food found or produced in the vicinity of one's native village is generally the food for which a taste has been acquired. There is an almost universal scarcity of fuel for cooking. Rice furnishes the bulk of the calories for the majority of consumers because it is well adapted to the soil and climate of most localities, and because it is simple and economical to cook.

FOODS SUPPLEMENTARY TO RICE

Where rice is not well adapted, millet, cassava, tapioca, sweet potatoes and corn supplement the rice diet, but these are generally looked upon as inferior foods. Fish, chicken, eggs, and vegetables are eaten in relatively small quantities when and where they are available. Meat of hogs, cattle, water buffalo, sheep, and goats is consumed at infrequent intervals where religious beliefs do not interfere. Legumes, such as soybeans in Japan and the various species of gram in India, are important sources of vegetable proteins.

The universal lack of refrigeration and other facilities for storing perishables has an important bearing on the food pattern. Meat must be eaten as soon as it is butchered. Hence, folks who have an animal to butcher often invite their friends and relatives for a feast at that time, or sell a portion of the meat. Then they must wait until another animal is available before meat can be served again. Fruits are also eaten as picked from the trees. Vegetables are eaten fresh, and when vegetables are not in season, none are available. One exception to this was found in Japan where the dikon, a large white radish, is pickled in brine and is thereby available over a longer period.

THE POSITION OF WHEAT IN THE FAR EASTERN DIET

In this dietary pattern, wheat has an increasingly significant place. Even among rice eaters, it is universally the cereal of second choice. It has been consumed for centuries in northern India in the form of chapattis and related preparations. Japanese and Chinese have long been accustomed to wheat noodles and steamed bread. The native wheat of Japan, prewar production of which averaged about 50 million bushels, is a semi-hard red winter, well adapted to noodle making under processing methods commonly in use there. The white wheat of the Punjab also seems well suited to making chapattis.

With the exception of noodles, chapattis and steamed bread, wheat products are not cooked in the home. There is an increasing consumer demand for bread, rolls, sweet biscuits, and cake, baked in small local bakeries throughout all the countries visited. Furthermore, the taste preference is for good quality white bread and rolls rather than for darker products. People who have been accustomed to white rice also want their bread and rolls made from white flour.

This growing taste for wheat products is particularly evident in the large cities where consumers have to buy their food and where they have become acquainted with bread through contact with the American Army and European populations. The use of rolls and bread, however, also is spreading out into smaller population centers wherever people have a little money to spend for supplementary foods.

Purchase of wheat products is not limited to the wealthy classes. Laborers and white collar workers are buying bread and rolls for the morning meal. Chauffeurs, laborers, and other workers also like to have hard rolls or bread to chew upon during the day. Wheat products are relatively inexpensive except where artificial restrictions have inflated local prices.

With the possible exception of Japan and India, wheat is not necessarily a substitute for rice. The Mission was told in a number of countries that increasing the local supply of rice would not necessarily reduce the demand for wheat. Even when rice becomes more plentiful, many workers will still want bread or rolls for breakfast and other wheat products later in the day. Increasing the standards of living and reducing dependence upon imported rice will, in many instances, release funds for the purchase of bakery goods made from imported flour.

The preference of consumers for wheat in the form of bakery products, noodles, and chapattis (in India) is further illustrated by experiences in many of the countries when whole wheat was delivered to consumers who had no previous contact with it. In many localities, this was done in attempts to relieve famine conditions brought on by a shortage of rice. When cracked or whole wheat was boiled and eaten in large quantities on empty stomachs, digestive disturbances resulted. The product was nauseating, and the people refused to eat any more of it.

In these situations, the people had not had previous experience in cooking wheat which requires more soaking and a longer cooking time than rice. It is possible that in many cases it was not well cooked. Since there were no other foods available at the time, the amounts eaten were larger than when wheat was used in a mixed diet. Adverse consumer reaction was found even when the wheat was treated so that it would

cook more like rice. Corn was also found to meet with considerable resistance among consumers in Japan, and the other countries visited. In the Philippines and Indonesia, where corn is produced in some areas, it is considered inferior to rice or bread.

Rice eaters generally prefer wheat in the form of white bread, rolls, and noodles and do not accept it as whole or cracked grain. A possible exception to this general rule was observed in southern India, where whole wheat was delivered to consumers in small quantities. In this area, however, the wheat was ground into meal, known as atta, and nutrition workers demonstrated the making of chapattis, puri, paratha, and other preparations. In such instances, the middle and upper classes who can afford more than one meal a day, are developing a taste for a certain amount of nearly whole wheat in these forms. The cereal ration in this area consisted of 10 ounces of rice and 2 ounces of wheat per day per adult and half these amounts for children under 12 years of age. Those who can afford only one meal a day, however, must have rice because it gives them a greater "sense of fullness" than other foods.

EVIDENCES OF DIETARY DEFICIENCIES APPARENT

Various aspects of the general food problem were discussed with nutrition authorities in the countries visited. In practically all areas, the consumption of meat, fish, vegetables, milk, fats and oils is very small. Even where these foods are relatively plentiful, they are not well distributed among the population and throughout the year. There are many evidences of dietary deficiencies, which could be corrected by increased consumption of animal proteins and by the use of enriched rice and enriched wheat flour. Consumers do not want brown rice or long extraction flour and will use them only when forced to do so. Even then, they will mill the rice at home or in local rice mills to increase the whiteness.

Some authorities also mention the undesirability of increasing the use of sugar and starchy grains without a corresponding increase in the consumption of proteins and minerals. As can be seen from a study of Tables 7 and 8, compiled from data published in the 1946 World Food Survey of the Food and Agriculture Organization, the diets of the Far East are already over-balanced in the direction of carbohydrates.

A visitor is often impressed with the small stature of the people in the Far East, especially among those who live in the warmer climates. Relatives of these same people who have lived in the United States and Europe are considerably taller. People in the Punjab and northern China are noticeably taller than those in southern India and southern China. While the wheat consumed in northern latitudes is sometimes credited with accounting for part of this difference, a greater consumption of milk, and other animal proteins in the northern areas is probably responsible.

Varying degrees of undernourishment were found in the countries visited. Many authorities pointed out that the native populations do not require as much food per capita as is consumed in Europe and the United States. There are several reasons for this. First, in a warmer climate, people require fewer calories for body maintenance, and with less activity, less food is needed. Second, they waste no food. Third, with the limited amounts available, they tend to make more economical use of the food consumed. Fourth, racial characteristics may have an important bearing on food requirements, although there is some difference of opinion among authorities on this point.

For these reasons, an Oriental country with a per capita food supply of only 1,800 to 2,000 calories per day, may not have as much undernourishment as would be expected when compared with an Occidental population with a per capita daily food supply of 3,000 or more calories. On the other hand, there is much undernourishment in the Far East and all countries visited are striving to increase food production and to provide a greater variety in the diet.

FAR EASTERN HOUSEWIVES TAKE PRIDE IN THEIR COOKING

In spite of their limited supply of food and fuel (judged by Occidental standards), housewives in the Far East take pride in their cooking and contrive to feed their families upon a variety of tasty dishes, all of them prepared according to the food habits and traditions of their respective localities.

One type of wheat product worthy of special mention here is chapattis. This is the traditional food of northern India and West Pakistan where wheat has been produced for centuries. Chappatis are made from a finely ground wheat meal, known as atta. The wheat is ground on a hand stone or grist mill, some of the bran being removed. The atta, however, contains about 93 to 95 percent of the whole wheat.

Chapattis are often baked on the side of a small stone oven. They are dipped in curry or dahl and are customarily used to convey other foods to the mouth. Variations of the chapatti are the puri, which is fried in deep fat, and the paratha, which is prepared with ghee, a clarified butter. The recipes for these three products are given below.

A RECIPE FOR CHAPATTIS

Wheat meal	4-1/2 ounces
Salt	1/4 teaspoon
Water	1/4 cup

Knead the meal well and keep the dough aside for 1/2 hour.

Make 4 to 6 balls and roll into flat chapattis.

Fry on hot, ungreased, and flat iron pan, turn as often as possible, and finish off by putting over hot embers for a minute so that it will rise well.

A RECIPE FOR PARATHA

Wheat meal	9 ounces
Salt	1/2 teaspoon
Water	1/2 cup
Ghee	1 ounce

Knead the dough well, adding a little ghee, and set aside for half an hour.

Divide the dough into 6 portions and roll each into a thin disc.

Brush with ghee, fold over, make a ball and roll again into a disc.

Fry on a hot, iron pan.

A RECIPE FOR PURI

Wheat meal	4-1/2 ounces
Water	1/2 cup
Salt	1/4 teaspoon
Oil or ghee	7/8 cup

Knead the dough with salted water until soft.

Take a lime-sized piece of dough and flatten it with a roller. Put it in the hot oil or ghee until it puffs up nicely.

MEALS SERVED IN AVERAGE HOMES

An attempt was made by the Mission to obtain as much first-hand information as possible regarding typical meals served in average homes in the countries visited. In presenting its on-the-spot observations of the type of meals being served, the Mission points out that the information should be considered as no more than a rough indication of food habits since it is not based on a detailed survey. Included also are comments on how wheat products fit into the general dietary pattern.

TYPICAL MEALS IN JAPAN

BREAKFAST	NOON MEAL	EVENING MEAL
Tea	Tea	Tea
Miso soup (miso is made from soybean cake by a mold fermentation process) with vegetables, pea pods, carrots and burdock.	Rice - two or three bowls if available and if it can be afforded; or noodles cooked in shoyu soup with vegetables and sometimes soybean curd; or bread, 1/2 pound or slightly less.	Rice - two or three bowls.
Rice - two bowls.		One or two of the following dishes:
Pickled dikon (big white radish).	Fish - fried or salted; or chicken, beef, or pork fried with vegetables like our hash, only not as watery.	Shoyu soup with vegetables, soybean curd or fish meal.
Sometimes a small piece of fish (boiled and dried or perhaps fried).	Greens and pickled dikon.	Fish, or meat if available, boiled in shoyu sauce and eaten with the "gravy" cooked with the fish or meat.
Tea again.	Tea again.	Cooked vegetables.
		Pickled vegetables.
		Fresh fruit, occasionally.
		Tea again.

The liquid used in cooking in Japan is usually consumed in one way or another. In boiling rice, the cook uses only as much water as the rice will absorb. If bread is eaten, it is preferred for breakfast and lunch. Many people like to have fresh bread or toast for breakfast at home. Noodles are preferred for lunch at home. Sweet biscuits, cakes and pastry (all grouped under the general term okashi) are eaten between meals and with tea in the afternoon.

A survey of bread and flour utilization in the Kanto area of Tokyo was made by the Public Opinion and Sociological Research Division of SCAP during November and December, 1949. The survey was conducted at the request of the Food Branch, Price and Distribution Division, Economic and Scientific Section, in order to provide data for the Grain Mission. While the information thus obtained should not be interpreted as necessarily representative of all Japan, it was of real value in connection with the Mission's appraisal of the potential market for wheat and flour in that country. On the basis of general information, it seems likely that both the utilization of and preference for bread and other wheat flour products are somewhat higher in the Kanto area of Tokyo than in the country as a whole.

The survey emphasized the fact that the experience of the Japanese people with bread and other wheat products has been quite different from that of Westerners, and that their reactions to the experience must be evaluated accordingly. First, bread has been offered as a substitute for rice, the traditional food, rather than as a supplementary food. Second, auxiliary foods, such as butter, cheese, honey, sugar, jam, and jelly, are scarce and exorbitant in price, and the bread is usually eaten plain, in place of rice. Third, most of the bread consumed in the post-surrender period has been what Westerners would consider to be quite inferior, having been made from rather coarse flour and often sour in taste.

The survey revealed that forty percent of the Tokyo housewives who make bread at home, make it by steaming it in a pot; 24 percent used a simple baking pot; and only

2 percent used a Western-style oven. It was also pointed out that if bread had been offered as a supplementary ration rather than as a rice substitute, if auxiliary foods had been available in sufficient quantities, and if a better quality bread had been possible, the reactions of the Japanese people to bread would have been quite different from that indicated by the survey.

Auxiliary foods loom large in any consideration of the acceptance of bread as a permanent food. The following statements, made by respondents during the survey, indicate the importance of these factors.

"If we could get more butter or vegetable oil on the ration, even a bread diet would taste good." (47-year-old wife of a white-collar worker).

"If they could give us white bread on the ration, rather than the kind of bread we get now, and if better quality auxiliary foods were available, I would prefer to have bread for meals rather than rice only." (26-year-old wife of a transportation worker).

"I have come to the point where I do not dislike bread as much as I did a year ago. If the quality were improved, I think I could get used to a bread diet." (40-year-old wife of a white-collar worker).

"We always liked bread before the War, and always ate it on Sundays. So we can get used to it. But if it is not white bread, we will be very unhappy about it." (50-year-old wife of a white-collar worker).

The Japanese concept of the term "bread" is quite different from that of an American. In the United States, the term is used with a fairly specific reference. In Japan, however, where the use of bread in the diet is much less familiar, the term is associated with a large number of different flour products. When Tokyo housewives were asked to indicate what they considered to be pan (the Japanese word for bread), it was found that while many of them associated it with bread and rolls in the western sense, they also thought of many other flour products.

With respect to the preparation of flour products, it was found that home processing of flour products is most common in Japanese rural areas. However, most rural families do purchase flour products processed commercially from time to time. In urban areas, store processing is most common. When using commercial processing about the same number of housewives have udon (noodles) made up as bread. Urban housewives have more bread, and rural housewives have more udon made up. But in home processing, udon is prepared more commonly than bread, particularly in rural areas.

The Japanese people are far from whole-hearted in their acceptance of bread, and tend to regard it as a temporary expedient rather than a permanently desirable part of the diet. Bread is liked principally for its convenience and disliked for reasons of taste and economy. From observation of the bread available in Japan, the Mission believes that if the Japanese people had received a better quality bread on their ration, their reaction toward it would have been much more favorable. There is a definite possibility of maintaining and perhaps even expanding wheat consumption in Japan if a better quality product is made available to consumers.

TYPICAL MEALS IN THE PHILIPPINES

BREAKFAST	NOON MEAL	EVENING MEAL
Pan de sal (hard rolls), or rice.	Rice or corn.	Rice, or corn.
Coffee.	Fish, or meat when available.	Cooked vegetable.
Bananas, or other fruit.	Bananas, or other fruit.	Fish - sometimes.
		Pork - sometimes.
		Chicken - sometimes.
		Water Buffalo meat - sometimes. (In cities some meat or fish nearly every night but in small amounts).
		Bananas, or other fruit.
		Coffee, or chocolate, at end of meal.

Pan de sal (hard rolls) is the typical breakfast for laborers and white-collar workers in the cities and other population centers. Corn is used only when rice is not available. When corn has to be served, consumers prefer white, flint corn, cracked to the size of polished rice. Asked if they would eat less pan de sal (hard rolls) when rice and corn become more abundant, the universal answer is "no." Pan de sal, bread, and other wheat products are not substitutes for rice, but are supplementary foods. The basic articles in the diet are rice and fish which are comparable to potatoes and meat in the United States. Flour consumption per capita was increasing before the war even when rice production was increasing. Pan de sal is eaten without spreads in the majority of cases although many of the Philippine people like butter or margarine with their bread and rolls.

The people of the Philippines have a definite sweet tooth. Cookies, sweet rolls, and coffee cake types are widely offered for sale. A substantial business is done in cookies, imported from the United States, when purchasing power permits. The Filipino consumer will pay premium prices for a type of pan de sal made from a richer-than-usual dough.

TYPICAL MEALS IN MALAYA

BREAKFAST	NOON MEAL	EVENING MEAL
Rice, or bread, or sweet-potatoes, or tapioca.	Rice.	Rice.
Coffee, if it can be afforded.	Fish if it can be afforded.	Fish.
	Vegetables - greens, etc.	Vegetables.
	Chile or curry - very hot.	Chile or curry - very hot.

The Grain Mission was told that even though the price of rice declines, many Malaysians will still eat it only twice a day and will still want bread for breakfast. Fruits are eaten between meals when available.

TYPICAL MEALS IN INDONESIA

BREAKFAST

Rice or bread.
Chili or curry.
Vegetables or fish.
Coffee.

NOON AND EVENING MEALS

Rice or corn.
Vegetable.
Meat or fish.

BETWEEN MEALS

Fruits, when purchasing power permits, or when available on the trees.

About 85 percent of the Indonesian people depend upon rice as the main item in the diet. In localities where rice cannot be grown, corn and cassava supply the bulk of the calories. One authority stated that there was an opportunity for a large increase in sales of bread and rolls to laborers, white-collar workers, and others in small shops around the cities and harbors. It was also suggested that consumption of bread products could be established in many homes. Consideration is being given by the Government to supplying the Indonesian army with bread for at least one meal a day.

TYPICAL MEALS IN THAILAND

The Mission was told that 90 percent of the Thai people ate about the same meal three times a day. The meal consists of rice, fish, vegetables and curry. In times of scarcity, many cannot afford fish. Coffee or tea are used in the towns and cities but not so much in the country. Fruit is eaten between meals, when it is available on the trees.

The taste trend is in favor of rolls because they are easier to serve. In the cities, bread consumption is expanding. Coolies use rolls or bread to chew on between meals. There is also an increasing demand for wheat noodles. Those of the Thailand people who eat meat have it once or twice a week for a few months after harvest, when they have the money. Among the Chinese population, there is a preference for bread for breakfast, noodles for lunch, and rice for dinner, along with a variety of other foods.

TYPICAL MEALS IN INDIA

BREAKFAST¹

Iddili or dhosai (variants of the chapatti) with coconut chutney; or -
Puri with potatoes, highly seasoned with curry; or -
Uppuma or pittu eaten alone; or -
Ragi congee or other form of congee (once a week).
Coffee, and other plantain (bananas).

NOON MEAL¹

Rice, parboiled - one serving with curry, one with sambar, and one with pepper water.
Vegetables.
Pickles.
Sometimes buttermilk, and quite frequently pappadam (cakes made from black gram dhal flour rolled as puri and dried and fried in deep fat).

EVENING MEAL¹

Same as lunch except that there will often be different vegetables, and when chapattis or puri are served for dinner, then rice is served.

¹ Typical vegetarian meal for middle class families in and around Madras. Nonvegetarians occasionally will have an egg for breakfast, and for lunch or dinner, vegetables mixed with mutton sauce or fried mutton.

NONVEGETARIAN DINNER¹

Parboiled rice.
Vegetable kurma - a sort of vegetable stew with condiments.
Yam fried in vegetable oil.
Mutton cutlet - ground meat and potato rolled into balls, dipped in egg, rolled in bread crumbs, and fried in deep fat.
Water to drink.

VEGETARIAN DINNER¹

Parboiled rice.
Vegetable kurma.
Fried plantain (banana).
Tomato and brinjal chutney.

The evening meal on January 24, 1950 for a lower class laborer earning 50 rupees a month, his wife, his mother, and three small children, consisted of parboiled rice and fish cooked with a few green tomatoes and curry. It was explained that fish was cheap there that day; otherwise the family would not have had it. When folk with low incomes have enough rice for only one meal a day, they serve it in the evening. If a little more rice is available, they will save some for the next morning.

In northern India, chapattis take the place of rice as the basic source of calories. Both chapattis and rice are served with curry sauce of dhal, a preparation of about the consistency of chilisauce and prepared from broken gram (similar to split peas), green chillies, and ghee (melted butter or margarine) seasoned with asafoetida, curry and coriander leaves, mustard, onions, tumeric and salt.

FOOD PROCESSING IN THE FAR EAST

The manufacture of food products for sale in the Far East is carried on under a variety of conditions ranging from quite primitive small installations to large, well equipped and well organized plants. In general, there are no broad regulatory programs comparable to our Food and Drug Act, and a very substantial portion of the food items are produced for sale under quite primitive conditions. This is particularly true for items intended for local consumption.

In such processing industries as fruit, vegetable and fish canneries, where the production is intended for export to Occidental areas, we observed greater attention to sanitation and more efficient operation. However, in many of the larger plants, whose production is intended for domestic consumption, fairly high standards of cleanliness and efficiency were also noted.

For the purposes of this study, the various industries that are more directly associated with the processing of wheat and wheat flour were investigated as thoroughly as possible. Since the utilization of wheat and wheat flour products is in effect competitive with that of more traditional foods, some of the more important indigenous products and methods of preparation are also described.

¹ Dinner served to nonvegetarian and vegetarian students at the Women's Christian College in Madras on January 24, 1950.

In a discussion of the technological level of food processing in the Far East, we should consider briefly some of the conditions under which those processes were introduced. We should also recognize the dependence of industrial processing upon the mechanical aptitude of a people, and the historical development of such traits. The jallopy, which we deprecate for stodgy, middle-aged reasons, is nevertheless an expression of a developed trait in the United States which is conspicuous by its absence in most Far Eastern areas.

SOME CHARACTERISTICS OF FLOUR MILLING IN THE FAR EAST

The flour milling industry in Japan, India and Pakistan includes roller milling systems imported from the United States, England and Germany, in addition to other milling systems ranging from animal-powered, stone burr mills to electrically-powered systems involving hammer mills and extensive sifting equipment.

The Japanese roller mills were imported by Japanese interests, and the management and operation of these mills has been in the hands of their nationals for a number of years. Although the ownership of many of the Indian and Pakistan mills is and has been in the hands of their own people, the physical operation has been under the supervision of British, Canadian and possibly Australian operating millers. After making allowance for war damage and the difficulties of rehabilitation in Japan, one cannot avoid being impressed by the relatively smoother operation of mills under European supervision, when compared to Japanese or Indian mills under their own supervision.

Significantly, each of the three countries has governmental control as to percent extraction and permitted moisture levels in products. The milled products are either purchased by government, or the mills grind government-owned grain on a fee basis, with government agencies rationing and distributing the milled products. While the required product is 85 percent extraction flour in Japan, the production in Indian and Pakistan mills is confined to "atta", an almost whole wheat meal.

Under these conditions of assured operating time and disposition of products, and with no encouragement relative to quality of product since mill brands are withdrawn, the contrasting attitudes of the management and operators in European supervised mills and those under indigenous supervision are of particular interest.

In the Indian and Pakistan mills, the cleaning of wheat, including washing, and the rehandling of screenings in order to procure maximum returns is common practice. Although the middlings purification system is shortened, the grinding operations, particularly in the breaks, follow conventionally good practice. The idea is to get the middlings out of the bran, and subsequently to pulverize that amount of bran necessary to meet the required extraction percentage. The residual bran is broad and clean. Atta, as such, does not encounter the range of uses which make baking quality an important consideration and good milling practice is of no particular consequence as it influences such quality. However, in normal operation, these mills produced flour, one or two grades of semolina, atta and millfeeds simultaneously, and the present operation of the mills makes possible the continued training of the operative employees in the requirements of good practice and mill maintenance.

The Japanese mills in all categories of size and type, are required to mill 85 percent extraction flour. Apparently, on the basis of an assumed premise in the

minds of industry members that such a long extraction flour cannot be of good quality, the usual practices associated with quality production have been curtailed or eliminated. The washing of wheat has been generally discontinued. In addition to the simplification of the purifier system, the grinding method has been drastically changed. The stocks are ground as closely as possible on all stands, starting with the first break. The resultant bran is almost as fine as our gray shorts or standard middlings.

In some instances, white and red wheats have been intentionally mixed prior to tempering, still on the premise that desirable quality was unattainable anyway. Members of the industry took the position that at 85 percent extraction no measurable improvement of quality would result from better milling practice, and expressed doubt that any real improvement could be expected at extractions over 80-81 percent.

In addition to the roller mills of up to 4,000-6,000 sack capacity described above, Japan has a large number of small roller mill and hammer mill installations. The total production of flour is about equally distributed between large and small mills, with mills of 220 sacks or less capacity per day producing 47 percent of the flour. The location of small mills in the United States was an accompanying development of wheat producing areas, and to a degree this is true in Japan, but some of this type are to be found in coastal cities in Japan.

The power-driven chakki, or burr mill, in India and Pakistan is the natural evolution of the hand-operated quern and chakki, and is to be found in the small towns and villages. The application of animal or other motive power to the chakki has not resulted in any particular change in the properties of atta. While these larger units are partly commercial enterprises, much of their activity is on a custom basis. Some improvement in wheat cleaning and added scalping operations have been effected over the years. Greater attention to these and other factors such as wheat quality, generally improved housekeeping, and the labeling of atta by grade were encouraged by the British Agricultural and Marketing Services prior to 1937. The net result was a more profitable operation since the better quality products commanded price premiums, and the over-all operation tended to be better controlled and more economical, once the operator was convinced of the profit advantages of such practices.

Atta is the traditional and principal form of milled product in those areas of India and Pakistan where wheat is a staple item in the diet of the people and where annual consumption is estimated at as high as 350 pounds per capita. Atta is used for the making of chapattis, a sort of pancake made from unleavened and unfermented dough. The chapatti is the form in which most of the wheat is consumed in the wheat consuming areas, serving both as an article of food and as a tool for transporting other food to the mouth.

Flour (maida) and coarse and fine semolina (suji and rawa) are used in the making of special foods and sweetmeats for festive and ceremonial occasions. In southern India uppuma, a sort of pudding made from semolina, is a well-known dish. In the more remote communities, flour and semolina are obtained by sifting atta, while in areas where distribution permits, these more refined products are obtained from the roller mills. Flour, atta, or combinations of the two are used in the production of fermented products such as pan bread and a particular kind of chapatti variously named in different areas.

BAKING PRACTICES IN CERTAIN FAR EASTERN COUNTRIES

Our usual first concern or consideration in the utilization of wheat products is associated with bread as such, and more specifically with yeast leavened bread. The preceding discussion of Indian and Pakistan's milling led naturally enough to the native methods of utilizing wheat products, and suggested that yeast leavened baked products are not an important indigenous development. This generalization can be applied to all of the Far East. As a consequence it is convenient to discuss the baking practices of the several countries by comparison with American standards.

In general, bread is more compact than American bread. The origins of the baking industry in the craftsmanship and traditions of Holland and England in part account for this fact in Indonesia, Singapore, Hong Kong, Siam and India. In all areas, the rate and extent of fermentation are much less than in our conventional practice. The quantity of added sugar and fat used is very much lower and in many cases unavailability of these ingredients to the baking industry entirely prohibits their use.

Bakeries range from the simplest hand shops with one or two workers to partially mechanized plants. Refrigeration as we use it for storage, dough temperature control, and dough room control are unknown. We did not see a divider, even in plants with several travelling ovens.

In Hong Kong, the Philippines, Singapore, Java, and Bangkok, most of the bakery business is in the hands of Chinese operators. A large number of small, family shops appears to be the rule, although some rather large Chinese-owned bakeries were visited in Manila. There were no Chinese bakers in that part of Japan which we visited, and relatively few in India.

In Japan, straight doughs were the rule, although one large plant in Nagoya was using a sponge fermentation. In the Philippines and in Singapore, the sponge process was more common but it was used more as a pre-ferment for dry yeast than as an active sponge fermentation.

Sanitation in most areas is more speculative than actual, but there are notable exceptions in the larger Japanese bakeries, where contact with American ideas, practice, and present supervision has resulted in acceptable conditions. In several biscuit plants in Pakistan the entire plant had screened windows, and interiors were well kept. In general, sanitation control is closely related to the amount of Occidental supervision.

In the warmer areas, doughs are commonly fermented on the bench, particularly in some of the smaller and medium sized shops. Live dry yeast and imported compressed yeasts are used except in Japan where domestically produced compressed yeast is available. In Djakarta, bread production was under such extremely rigid rationing and price control that a home-made yeast grown on sprouted green beans and sugar was in vogue.

Bread and buns in general are unacceptable according to our ideas of quality, but in spite of this, we observed repeated evidence of good practical craftsmanship

on the part of even the smaller bakers. Luxury items, such as cakes, sweet rolls, sweet biscuit and pastries, were seen in every market area and the quality was generally very good.

Without stressing the inconsistency, lack of ingredients such as sugar and fat for good bread and the appearance of very good pastries in the same bakery are common. Well-known American brands of pastry flour were seen in the Philippines.

One "old-timer" in the Orient said that it was impossible to make good bread in tropical and sub-tropical areas. Another European told us that the small Chinese bakers were the preferred source of good bread, but inquiry as to the source of flour used by these bakers in his particular area was fruitless.

IMPROVEMENT IN FLOUR QUALITY NEEDED

The statement that good bread is impossible deserves attention. After making all allowances for lean formula, limited equipment and rule-of-thumb methods, we were impressed by one factor which is more or less common in all areas visited except the Philippines. This factor is flour which is out of condition, or over-aged. Whether we call it sour, musty, or rancid does not restore its bread baking properties. Perhaps the old China hand above referred to was right!

Under the conditions of our survey, it was impossible to determine the relative effects of possibly poor inventory practices by importers and long haul ocean transport under normal business conditions. In general, we expect that commercial enterprise operated for profit will establish such practices as will maintain and expand business. This would minimize the argument as to poor inventory control.

Flour importers and other observers were in agreement that regular shipments of fresh flour and consistent distribution to bakers and other flour users would stimulate the demand for wheat flour. Ocean freight rates and schedules cannot encourage us to expect preferential handling of a relatively low cost, bulky commodity such as flour.

A possible avenue for improvement in flour quality may be in the development of better packaging. In one area we encountered a reference to Canadian flour in multi-wall bags, and the report indicated that the package was useful in protecting and prolonging baking quality. It is possible that a modification of present flour bags would act as a stimulant to flour usage in tropical and sub-tropical areas.

The expansion of a wheat and wheat flour market naturally depends upon the availability of good products for the consumer's selection. In all areas except the Philippines, postwar conditions have operated against realization of this goal. It may well be that incomplete recognition of the factor of flour age and the extremely rapid deterioration of flour in the tropical Orient have been a greater deterrent to expansion of wheat usage than other elements of quality.

The importance of the bread baking industry in Japan is reflected in the existence of a vigorous yeast industry. The quality of compressed yeast was much more variable between and within plants than is the case in the United States, and the larger bakeries were obliged to compensate for this lack of uniformity by mixing yeasts from



FIGURE 8. Grinding floor of a modern Japanese flour mill.



FIGURE 9. Bolter or sifter floor of a Japanese flour mill.

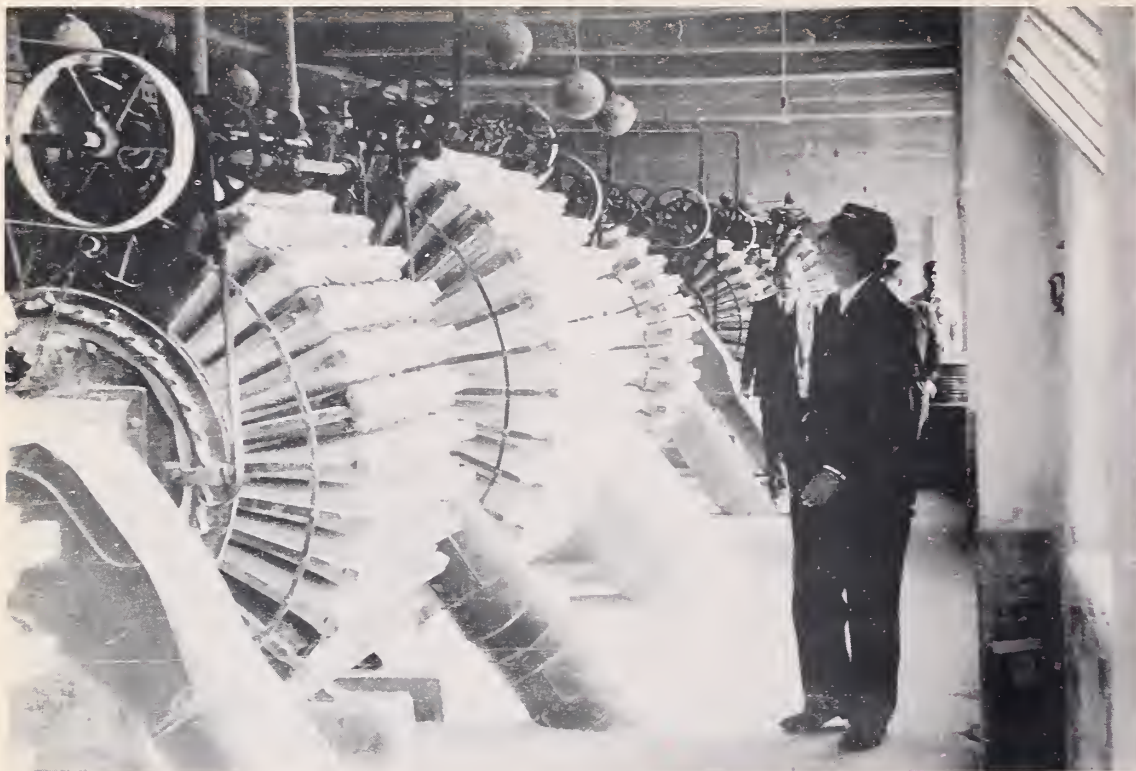


FIGURE 10. Dust collectors in a Japanese flour mill.



FIGURE 11. Japanese bakers shape dough into bread and rolls before baking. (U.S. Army Photograph)

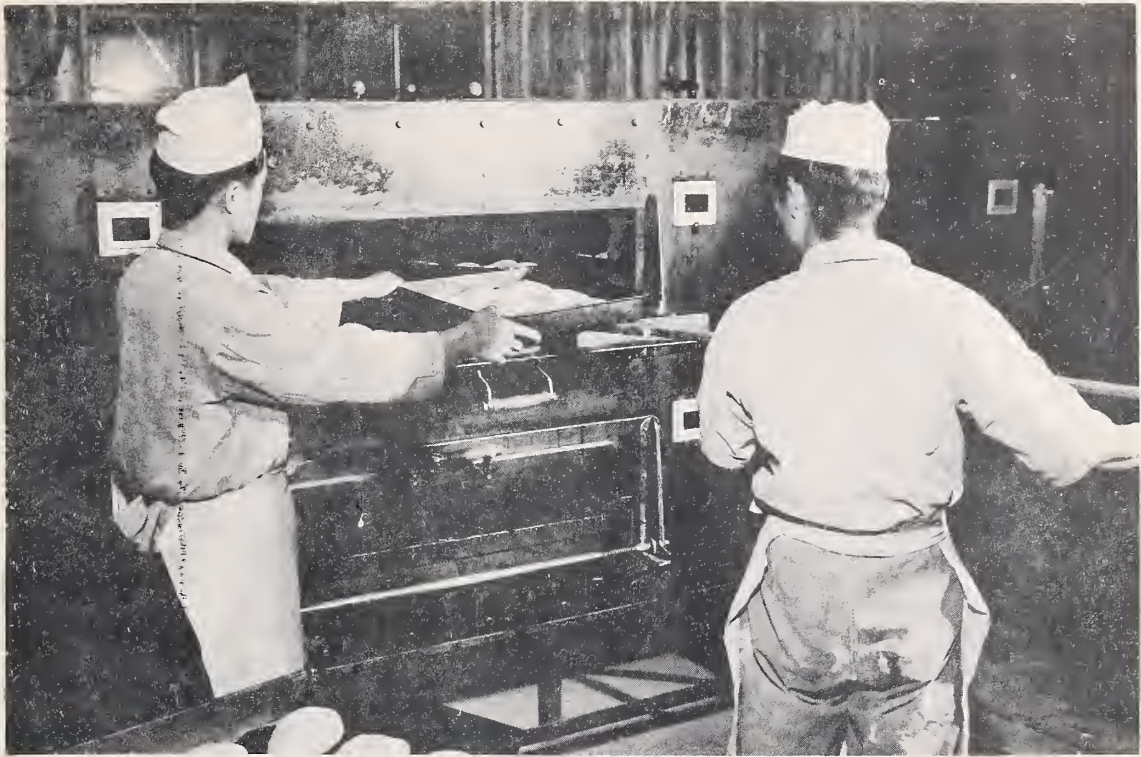


FIGURE 12. Japanese bakers place pans of rolled dough in ovens for baking. (U.S. Army Photograph)



FIGURE 13. Japanese women weigh noodles before packing them. (U.S. Army Photograph)

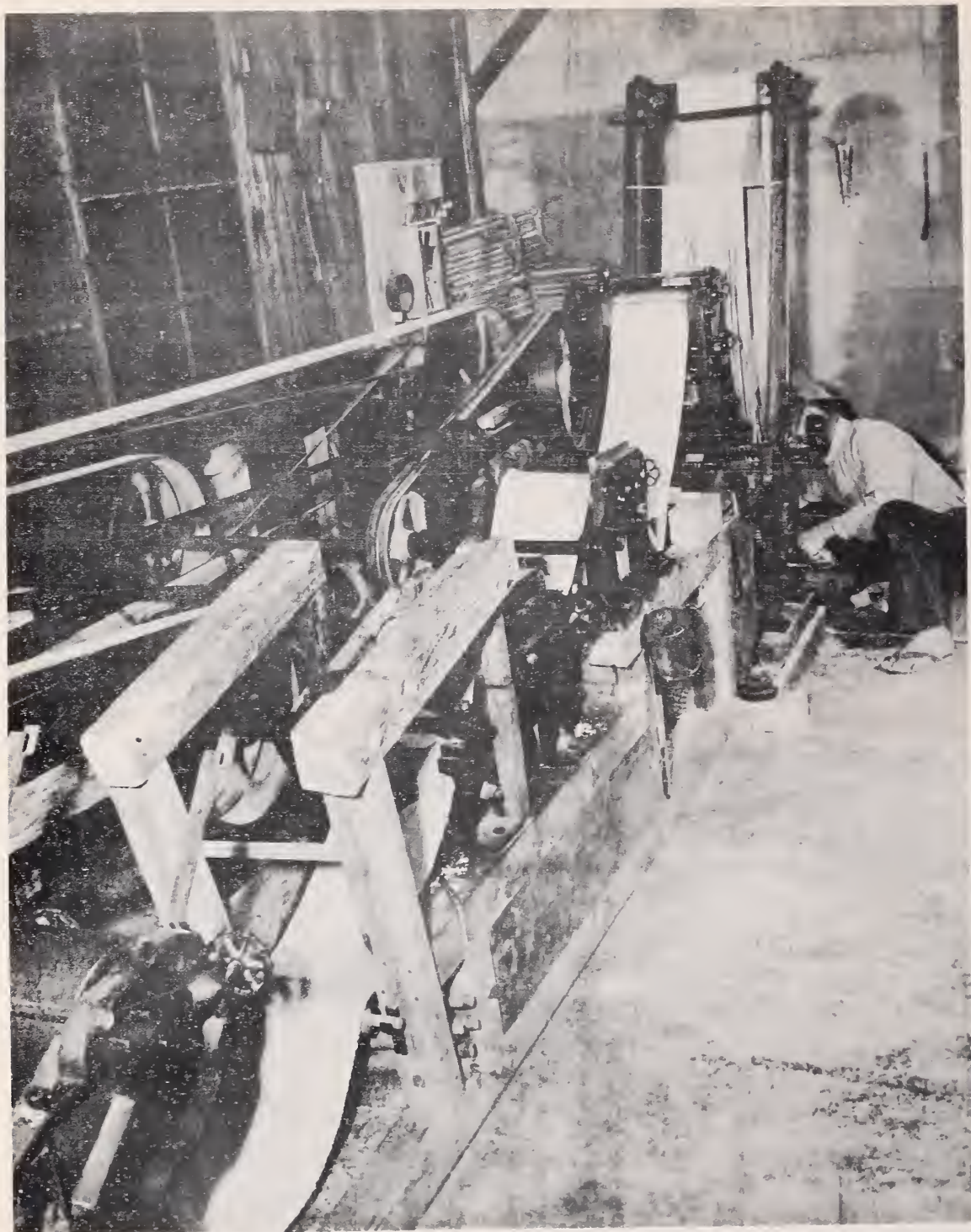


FIGURE 14. Japanese machine rolls and cuts dough into noodles. (U.S. Army Photograph)

several suppliers. There were two or three producers of compressed yeast in Java before the war, but due to war and other destruction, none of this is in operation now.

The Japanese yeast plants were using low-grade molasses as a source of sugar, together with barley malt and ammonium sulphate as sources of nitrogen. Mashers are not as carefully filtered, nor is the yeast washed as carefully as in American practice. Temperature control and physical safeguards against contamination were rather limited. In some plants, the handling of yeast between final collection and pressing into cakes would permit deterioration.

The permissible percentage of yeast to be used by the bakers was limited by the capacity of Japanese yeast plants and the quantity of raw materials available to the yeast industry. However, in spite of the imposed limitations, the members of the industry were aggressively interested in improving their process and product. With a vigorous local industry, the import of compressed or live dry yeast does not appear likely to become a large item.

NOODLE AND VERMICELLI PRODUCTS AN IMPORTANT OUTLET FOR FLOUR

An important outlet for wheat flour is in the production of noodle and vermicelli products. Although a preference for strong high protein flour was expressed in some localities, the bulk of the production is from lower protein (8.5 - 10.0 percent) flours. In Japan, approximately 35 percent of the wheat flour consumed was in the form of noodles. In other areas the data regarding the relative amounts of flour used for various food products were inconclusive, although in general a large Chinese population was considered to be a natural outlet for substantial quantities of wheat flour in the form of noodles.

In some areas, notably Thailand, noodles were made from rice flour, and the apparent discrepancies between size of Chinese population and amount of wheat flour used was partially attributable to this practice. Because of the comparative costs of rice and wheat flour in usual commerce, it should be pointed out that broken rice and lower grades of rice are used for such production.

The production of noodles in Japan is about equally divided between conventional dried noodles, and precooked noodles which are sold in the wet form. In areas where rice noodles are made, several modifications of precooking are practiced, and the product may be sold in either wet or dried form.

The Japanese system of noodle manufacture makes use of a very dry dough, containing less than 25 percent water. The water is added in small quantities to the rapidly agitated flour to form a damp, crumbly mass which assumes the properties of a dough when subjected to pressure. This crumbly mass is sheeted through a series of rollers and the sheet is rolled upon a horizontal spindle, where it is permitted to "condition" while additional spindles are loaded. The dough from two, three or four of these spindles is then combined in a second sheeting operation, the resultant sheet passed through a pair of rolls which cuts the dough into strips lengthwise, and the cut noodles caught on suitable rods and dried.

The noodles are dried under atmospheric conditions in rooms with high ceilings. Aside from natural convection and air movement through doors and windows, no provision is commonly made for controlled air circulation.

The preparation and handling of the dough for cooked noodles is comparable except that the operation is conducted on a smaller scale. The noodles are cooked, washed in cold water, drained and weighed into suitable retail units.

The manufacture of biscuit products is widespread, and with the exception of Djakarta, large plants were in operation in all the cities visited. We did not encounter any production of yeast fermented cracker types, the entire production being in chemically leavened types ranging from hard tack to baby biscuits and in some cases to sugar-filled wafer types.

In this industry, the degree of mechanization, plant layout and cleanliness was above average and compared more favorably to our concepts of proper conditions. Since biscuits have a reasonable shelf life and can be shipped into interior areas, it is not surprising to note that the industry, as a whole, is expanding. It is noteworthy that the projected expansion is planned to be with the most modern equipment available.

Another industry of direct interest to grain producers is the brewing industry. In addition to the historical production of saki, a rice wine, in Japan, there is a substantial beer brewing industry in Japan and in the Philippines, as well as some brewing in other areas. Much of the domestic beer is of quite good quality, in addition to which imported American and European beers are offered for sale.

In addition to the industries associated with wheat and wheat flour, a cumulative large production of traditional native foods is conducted in commercial operations. Important groups of industries in this category are the several edible soybean foods and condiments manufactured in Japan, precooked rice and soybean noodles in Siam, and a great number of confections ranging from rice cookies to hard candy.

POSSIBILITIES AND LIMITATIONS FOR UNITED STATES WHEAT AND FLOUR EXPORTS TO THE FAR EAST

It is exceedingly difficult to make a quantitative appraisal of future wheat and flour imports in Oriental countries and even more difficult to appraise the possibilities of participation by the United States in those markets. During the five year period, 1934-38, net imports into the entire area averaged 33,425,000 bushels. (See Table 1.) India, at that time, however, was a large net exporter of wheat. Shipments to the Far East from the four principal overseas exporting countries (Canada, Argentina, Australia and the United States) averaged 44,882,000 bushels during the same period. (See Table 2.)

Imports into the area since World War II have been much greater than ever before. Shipments to those markets from the four overseas exporters in 1948-49 amounted to 168,551,000 bushels of which 113,515,000 bushels were in the form of wheat and 55,036,000 bushels in the form of flour. The larger portion of the increase was in the form of wheat shipments to Japan and India. There have also been substantial increases in flour shipments to the Philippines and Ceylon. Exports to China were less in 1948-49 than before the war and have practically vanished for the time being.

ESTIMATE OF POTENTIAL MARKET FOR WHEAT AND WHEAT FLOUR

Ceylon, Indonesia and the Philippines have agreed, under the International Wheat Agreement, to purchase 14,367,000 bushels annually for the four marketing years 1949-50 through 1952-53. These purchases will be almost entirely in the form of flour. India is in the Agreement for 38,287,000 bushels which will be purchased mostly in the form of wheat. Japan, which may or may not come under the Agreement, will continue to import at least 2-1/2 million metric tons of rice, wheat and other grains in order to feed her people. Of this, it is anticipated that one million tons (about 37,000,000 bushels) will be in the form of wheat.

Prospective flour imports into countries outside the Wheat Agreement provide potential markets equivalent to 1,000,000 bushels of wheat for local use in Hong Kong, 4,500,000 bushels in Malaya, 750,000 bushels in Thailand and varying amounts in other countries. (See Table 2.)

From these calculations it seems likely that there will be an opportunity, for the next few years, to sell about 22,000,000 bushels in the form of flour and 77,000,000 bushels in the form of wheat in Far Eastern countries other than China. The share of this total market accruing to the United States will depend very largely upon relative costs of American wheat and wheat products to the importing countries, as well as the United States' share in purchases of exports from those countries.

Japan and India can be expected to continue as importers of wheat in preference to wheat flour. Both countries have a substantial milling industry, and the dictates of internal economy require that this industry be operated at as near maximum capacity as possible. In the case of India, the added factor of the effect of a hot, humid climate upon the keeping quality of milled wheat products, coupled with an established preference for long extraction meal for the bulk of their wheat usage, tends to make the import of wheat flour a very limited item. The Government of India, however, has announced as a definite policy that no food grains will be imported after the 1951 crop year. If this policy can be carried out, India will no longer be in the market for wheat, except as committed under the International Wheat Agreement.

Wheat shipments to Japan in recent years have been supplied by the U.S. Army which in turn has acquired the wheat from the Commodity Credit Corporation. Funds for this purpose are to be gradually reduced and Japan will then have to buy rice, wheat and other imported foods from countries that purchase Japanese manufactured goods. Unless the United States is willing to import larger quantities of Japanese goods, Japan will be forced to buy wheat elsewhere. Other wheat exporters have shown a greater willingness to purchase from Japan and they will get this business unless the United States changes its attitude toward imports from Japan.

Among the areas indicated as wheat flour markets, the Philippines are the important open market in terms of tonnage, representing a wheat equivalent of 7 million bushels. In this market the United States has enjoyed a traditional preferential status, but the element of price consciousness and flour quality makes it a truly competitive market.

Singapore and Malaya offer a present market for wheat flour equivalent to 4 to 4.5 million bushels of wheat. This market is artificially restricted in total quantity

by the Colonial Food Control Board, and it is further restricted to the practical exclusion of the United States because of regulations controlling the use of dollar exchange. The monetary restrictions channel trade in flour to Australia and Canada, and any modification of this situation will have to be on London-Washington levels. Even if trade in flour with the United States were permitted, price competition, both in commodity and transportation costs, would have to be met.

Indonesia offers a potential market for 2-3 million bushels of wheat in the form of flour. This is an open market which has been supplied by the United States in recent years, but geography and the prewar reputation of Australian flours may tend to reestablish the earlier trade patterns. The postwar operations of the government in control of imports, allocations and rationing of flour have resulted in the distribution of over-aged flour with accompanying difficulty for the baking industries in Indonesia. There is some interest in government circles toward increasing the utilization of bread in army rations. This is offset, however, by the requirements of monetary economy and the pronounced intention of self-sufficiency in food production.

Thailand is a competitive market, but flour imports are subject to a 25 percent import duty. The best estimates from commercial sources indicated a market equivalent to 3/4 million bushels of wheat. The use of wheat flour is largely concentrated in the larger cities where substantial Chinese populations are potential customers for wheat flour and products made from wheat flour. Australian and Canadian flours are well established in the Thailand market, primarily because of price advantages and to some extent because of the preferred quality of the latter.

Hong Kong is an open market with no governmental preference in terms of interdominion trade. The United States flours were 40-70 cents higher per cwt. than comparable grades of Australian and Canadian flour. Flour requirements of the local population in Hong Kong represent the equivalent of about 1,000,000 bushels of wheat. Flour shipments through Hong Kong to South China and other nearby areas were the equivalent of 2,700,000 bushels in 1934-38 and 2,450,000 bushels in recent years. Such shipments in the future are very problematical.

CONDITIONS NECESSARY FOR EXPANDING WHEAT AND WHEAT FLOUR EXPORTS TO THE FAR EAST

In conclusion, it may be said that continuing trade with any of these countries will first depend upon establishing a high level of political and economic stability. If this can be done, the second requirement for U. S. trade will be a sufficient amount of dollar exchange over and above other requirements, with which to purchase wheat and flour. If the proper basis for commercial trade can thus be established, and if we are to retain any portion of the potential markets, it will also be absolutely necessary to put our wheat and flour prices on a basis competitive with those from other exporting countries. Modification of import restrictions and elimination of all measures that make it difficult or impossible for bakers to buy flour on a competitive basis are very important to the maintenance and development of our Far Eastern flour outlets in the future.

Under favorable circumstances it is possible that flour consumption in the Far East could be substantially larger than indicated above and the United States could participate in that market to the extent that dollar exchange is available. On the other hand, continued political and economic instability could result in the virtual

disappearance of markets in that part of the world. Furthermore, continued high prices in the United States and continued shortage of dollar exchange could very well prevent us from selling any appreciable amounts of wheat or flour in the Far East. We have it very largely within our power to maintain and even expand our outlets or, by continuation of present policies, to force potential customers to trade elsewhere.

If the United States is to sell wheat and flour in the Orient, all possible steps should be taken to remove trade barriers and exchange controls, and to return the wheat and flour trade to private commercial channels. In order to accomplish this, a number of specific steps might be taken.

1. Removal of trade barriers and exchange controls on the part of Oriental countries requires that we in the United States open our markets to the fullest extent possible for the commodities which they wish to export. The Reciprocal Trade Agreements Program is one way of bringing this about. Some firms in the United States are now purchasing goods in the Far East in connection with the sales of United States manufactured products. Wheat and flour exporters might well explore the possibilities for establishing two-way trade and assisting their Far Eastern customers in selling commodities in the dollar area.
2. Removal of trade barriers also requires a greater degree of economic and political stability in the Far East. Foreign aid programs and other measures designed to promote such stability are in the best interests of those seeking larger wheat and flour sales in that part of the world.
3. Necessary modifications of policy both at home and abroad are best determined by information and knowledge supplied through frequent personal contacts. As one means of facilitating the flow of such information, a full-time representative of the United States Department of Agriculture should be stationed in the Far East with opportunity for frequent travel throughout the area for the purpose of maintaining a steady flow of information on all factors influencing the supply and demand situation for grain and grain products. It should also be the function of such a representative to translate the results of his investigations into recommended policies which the Government of the United States might adopt in order to enable us to expand our trade and improve our relationships as they relate to the market for our grain and flour in that part of the world.
4. Interchange of technical workers between the United States and the Far East would also be beneficial. A number of countries would be interested in sending representatives of their food processing industries to study milling and baking methods in the United States. They would also welcome first-hand technical advice on the part of properly qualified baking and milling experts from the United States.

The Mission would also emphasize that the people in Far Eastern countries like Americans and American products. The more our people visit those countries and become personally acquainted with the people, the better will we be able to establish mutually profitable trade relations with them. It is equally essential that their leaders and businessmen come to the United States and get acquainted with us. We cannot merely transplant American processing methods and business methods into Far Eastern countries. We have a lot to learn from them and they, in turn, can learn some things from us.

There are definite business opportunities in the Orient, if we put ourselves in a position to offer our wheat and flour at competitive prices in those markets. We must use our influence and ingenuity to expand trade with the Far East by making it possible for people in those countries to sell their products in the United States.

We must look upon them as customers with very selective preferences, and send them regularly, and in good condition, the kinds of wheat and flour that will produce the things they like to eat. The market is not large in terms of the total consumption of other cereals in those countries, nor is it large in terms of the total wheat surplus in the United States. The size of the flour market, however, is very attractive to the millers on the Pacific coast, and the wheat requirements of Japan and India alone could provide satisfactory outlets for the entire surplus wheat of the Pacific Northwest.

Finally, the Mission would reemphasize that we cannot expect to sell much wheat or flour in those markets unless we are prepared to meet competitive prices.

STATISTICAL APPENDIX

The tables appearing in the Statistical Appendix have been limited almost entirely to data showing the prewar and postwar movement of wheat and wheat flour to Far Eastern markets. This was done primarily in order to expedite the distribution of this report and to avoid the time and the expense that would be involved in publishing statistical details pertaining to the agriculture of the Far East which have previously been published and transmitted to all names on various commodity mailing lists of the Department of Agriculture. The Office of Foreign Agricultural Relations regularly issues world reports covering acreage, yield and production of all of the major agricultural crops in individual countries over a period of years. These are available on request to the Office of Foreign Agricultural Relations, United States Department of Agriculture, Washington 25, D. C.

TABLE 1.-Foreign Trade of Specified Far Eastern Countries in Wheat and Wheat flour, Average 1934-38
(In grain equivalent)

COUNTRY	WHEAT			WHEAT FLOUR ¹			TOTAL WHEAT AND FLOUR		
	IMPORTS	EXPORTS	NET IMPORTS + NET EXPORTS -	IMPORTS	EXPORTS	NET IMPORTS + NET EXPORTS -	IMPORTS	EXPORTS	NET IMPORTS + NET EXPORTS -
	<i>Bushe ls</i>	<i>Bushe ls</i>	<i>Bushe ls</i>	<i>Bushe ls</i>	<i>Bushe ls</i>	<i>Bushe ls</i>	<i>Bushe ls</i>	<i>Bushe ls</i>	<i>Bushe ls</i>
British Borneo:									
North Borneo.....	-	-	-	51,900	-	+51,900	51,900	-	+51,900
Brunei.....	-	-	-	13,200	-	+13,200	13,200	-	+13,200
Sarawak.....	-	-	-	83,800	-	+83,800	83,800	-	+83,800
Burma.....	2 172,700	2 8,500	2 +164,200	2 1,405,600	2 2,900	2 +1,402,700	2 1,578,300	11,400	+1,566,900
Ceylon.....	122,400	-	+122,400	802,000	-	+802,000	924,400	-	+924,400
China.....	8,419,400	493,500	+7,925,900	4,181,900	244,000	+3,937,900	12,601,300	737,500	+11,863,800
French India.....	-	-	-	10,300	-	+10,300	10,300	-	+10,300
Fr. Indochina.....	2,200	-	- 2,200	938,700	1,000	+937,700	940,900	1,000	+939,900
Hong Kong.....	-	-	-	3,578,300	2,700,400	+877,900	3,578,300	2,700,400	+877,900
India:									
Sea-borne trade.....	1,503,500	7,399,700	-5,896,200	19,100	1,756,800	-1,737,700	1,522,600	9,156,500	-7,633,900
Trade by land.....	305,300	968,200	-662,900	-	-	-	305,300	968,200	-662,900
Kathiawar by sea.....	-	400	-400	-	-	-	-	400	-400
Indonesia.....	700	-	+700	3,852,700	500	+3,852,200	3,853,400	500	+3,852,900
Japan.....	11,006,100	-	+11,006,100	343,900	11,084,200	-10,740,300	11,350,000	11,084,200	+265,800
Japan ³	192,900	417,800	-224,900	7,800	1,924,400	-1,916,600	200,700	2,342,200	-2,141,500
Japan ⁴	-	435,800	-435,800	-	1,258,600	-1,258,600	-	1,694,400	-1,694,400
Korea.....	193,300	2,900	+190,400	1,000	383,100	-382,100	194,300	386,000	-191,700
Korea ⁵	417,800	192,900	+224,900	1,924,400	7,800	+1,916,600	2,342,200	200,700	+2,141,500
Formosa ⁵	43,000	-	+43,000	-	-	-	43,000	-	+43,000
Formosa.....	435,800	-	+435,800	1,258,600	-	+1,258,600	1,694,400	-	+1,694,400
Malaya.....	25,400	2,900	+22,500	3,104,100	293,500	+2,810,600	3,129,500	296,400	+2,833,100
Manchuria.....	2,600	452,700	-450,100	14,866,800	85,200	+14,781,600	14,869,400	537,900	+14,331,500
Philippines.....	-	-	-	3,923,700	4,400	+3,919,300	3,923,700	4,400	+3,919,300
Portuguese India.....	86,300	-	+86,300	95,500	-	+95,500	181,800	-	+181,800
Thailand.....	-	-	-	6 166,100	6 11,300	6 +154,800	6 166,100	6 11,300	6 +154,800
Macao.....	-	-	-	-	-	-	-	-	-
Total.....	22,929,400	10,375,300	+12,554,100	40,629,400	19,758,100	+20,871,300	63,558,800	30,133,400	+33,425,400

¹ Flour converted to grain on the basis of the coefficient: 1 quintal = 1.33333 quintal of grain or 4.899099 bushels of grain.

² Average 1937-38 and 1938-39. ³ According to the statistics of Korea; trade with Korea. ⁴ According to the statistics of Formosa; trade with Formosa. ⁵ Trade with Japan. ⁶ Average 1934-36.

International Yearbook of Agricultural Statistics, 1941-42 to 1945-46, Volume II, International Trade, International Institute of Agriculture, Rome.

TABLE 2.-Wheat and Wheat Flour Exports to Specified Far Eastern Markets from Argentina, Australia, Canada and the United States, 1934-38 and 1948-49
(In grain equivalent)

DESTINATION	1934-38 ¹			1948-49 ²			INTERNATIONAL WHEAT AGREEMENT	PROSPECTIVE REQUIREMENTS 1950-52		
	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL		WHEAT	WHEAT FLOUR	TOTAL
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels		1,000 bushels	1,000 bushels	1,000 bushels
Borneo	-	51	51	-	-	-	-	-	-	-
Burma	-	64	64	-	283	283	-	-	200	200
Ceylon	134	777	911	-	8,630	8,630	4,409	-	4,500	4,500
China	8,934	3,164	12,098	1,532	3,516	5,048	-	-	-	-
Formosa	-	-	-	-	-	-	-	-	-	-
Hong Kong	51	3,353	3,404	(3)	1,540	1,540	-	-	1,000	1,000
India	1,666	25	1,691	61,059	5,076	66,135	38,287	38,000	-	38,000
Indochina	-	229	229	-	328	328	-	-	200	200
Indonesia	(3)	3,846	3,846	5	4,214	4,219	2,756	-	2,750	2,750
Japan	10,325	893	11,218	45,852	14,306	60,158	-	37,000	-	37,000
Korea	-	-	-	4,130	1,835	5,965	-	2,000	1,000	3,000
Kwantung	15	850	865	-	-	-	-	-	-	-
Malaya	8	2,907	2,915	(3)	4,452	4,452	-	-	4,500	4,500
Manchuria	-	2,628	2,628	-	-	-	-	-	-	-
Pakistan	-	-	-	935	459	1,394	-	-	-	-
Philippines	(3)	4,522	4,522	2	10,267	10,269	7,202	-	7,500	7,500
Portuguese Asia ...	-	-	-	-	72	72	-	-	-	-
Thailand	3	437	440	(3)	58	58	-	-	750	750
Total	21,136	23,746	44,882	113,515	55,036	168,551	52,654	77,000	22,400	99,400

¹ U.S., Canada and Argentina, calendar year basis; Australia, year beginning July 1.

² Year beginning July 1 for all 4 countries.

³ Less than 500 bushels.

Argentina: 1934/38 - Anuario del Comercio Exterior.

Australia: 1934/38 - Overseas Trade and Customs and Excise Revenue. 1948/49 - Summary of Australian Statistics, June 1949.

Canada: - Trade of Canada.

TABLE 3.-United States Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods
(In grain equivalent)

DESTINATION	1934-38 AVERAGE ¹			1945-46 ²			1946-47 ²		
	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Borneo	-	-	-	-	-	-	-	-	-
Burma	-	-	-	-	-	-	-	-	-
Ceylon	-	(3)	(3)	-	-	-	-	6,520	6,520
China	1,555	570	2,125	9,858	3,272	13,130	3,147	2,413	5,560
Formosa	-	-	-	-	-	-	-	-	-
Hong Kong	5	673	678	-	165	165	-	1,002	1,002
India	4	(3)	4	5,795	5	5,800	18,543	2,829	21,372
Indochina	-	1	1	-	128	128	-	(3)	(3)
Indonesia	-	2	2	-	1,316	1,316	-	2,404	2,404
Japan	915	19	934	9,724	1,197	10,921	24,310	3,933	28,243
Korea	-	-	-	-	-	-	-	-	-
Kwantung	-	40	40	-	-	-	-	-	-
Malaya	-	(3)	(3)	-	-	-	-	1,265	1,265
Manchuria	-	-	-	-	-	-	-	-	-
Pakistan	-	-	-	-	-	-	-	-	-
Philippines	(3)	2,353	2,353	459	7,776	8,235	(3)	7,237	7,237
Portuguese Asia	-	-	-	-	-	-	-	-	-
Thailand	-	(3)	(3)	-	-	-	-	-	-
South and Southeastern Asia	-	-	-	-	-	-	-	-	-
Total	2,479	3,658	6,137	25,836	13,859	39,695	46,000	27,603	73,603

See footnotes at end of table.

Continued -

TABLE 3.-United States Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods - Continued
(In grain equivalent)

DESTINATION	1947-48 ²			1948-49 ²			JULY-DECEMBER 1949		
	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Borneo	-	-	-	-	-	-	-	-	-
Burma	-	-	-	-	-	-	-	-	-
Ceylon	-	1,807	1,807	-	-	-	-	(3)	(3)
China	1,651	2,317	3,968	972	3,166	4,138	-	-	-
Formosa	-	-	-	-	-	-	-	243	243
Hong Kong	-	25	25	-	269	269	1	689	690
India	10,499	4,231	14,730	21,087	1,777	22,864	925	4	929
Indochina	-	(3)	(3)	-	54	54	-	-	-
Indonesia	-	2,893	2,893	5	4,199	4,204	-	1,215	1,215
Japan	32,267	2,227	34,494	44,009	14,303	58,312	39,617	548	40,165
Korea	2,814	1,267	4,081	4,130	1,835	5,965	-	-	-
Kwantung	-	-	-	-	-	-	-	-	-
Malaya	-	1,282	1,282	(3)	-	(3)	-	(3)	(3)
Manchuria	-	-	-	-	-	-	-	-	-
Pakistan	312	-	312	674	(3)	674	-	-	-
Philippines	-	4,659	4,659	2	7,578	7,580	-	2,640	2,640
Portuguese Asia	-	37	37	-	-	-	-	98	98
Thailand	-	-	-	-	13	13	-	5	5
South and Southeastern Asia	-	9	9	-	-	-	-	-	-
Total	47,543	20,754	68,297	70,879	33,194	104,073	40,543	5,442	45,985

¹ Calendar years.

² Year beginning July 1.

³ Less than 500 bushels.

United States Foreign Commerce and Navigation.

TABLE 4.-Canadian Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods.
(In grain equivalent)

DESTINATION	1934-38 AVERAGE ¹			1945-46 ²			1946-47 ²		
	WHEAT 1,000 bushels	WHEAT FLOUR 1,000 bushels	TOTAL 1,000 bushels	WHEAT 1,000 bushels	WHEAT FLOUR 1,000 bushels	TOTAL 1,000 bushels	WHEAT 1,000 bushels	WHEAT FLOUR 1,000 bushels	TOTAL 1,000 bushels
Borneo	-	-	-	-	-	-	-	-	-
Burma	-	-	-	-	9	9	-	-	-
Ceylon	-	-	-	813	848	1,661	-	-	-
China	31	277	308	-	723	723	-	6,622	6,622
Formosa	-	-	-	-	-	-	-	-	-
Hong Kong	(3)	615	615	-	669	669	-	398	398
India	-	-	-	-	-	-	-	-	-
Indochina	-	-	-	-	-	-	-	-	-
Indonesia	-	59	59	-	30	30	-	208	208
Japan	2,442	774	3,216	-	-	-	-	-	-
Korea	-	-	-	-	-	-	-	-	-
Kwantung	-	-	-	-	-	-	-	-	-
Malaya	-	-	-	-	-	-	-	-	-
Manchuria	-	-	-	-	-	-	-	-	-
Pakistan	-	-	-	-	-	-	-	-	-
Philippines	(3)	669	669	-	2,053	2,053	-	2,916	2,916
Portuguese Asia	-	-	-	-	3	3	-	20	20
Thailand	-	(3)	(3)	-	-	-	-	-	-
Total	2,473	2,394	4,867	813	4,335	5,148	-	10,164	10,164

See footnotes at end of table.

Continued -

TABLE 4.-Canadian Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods. - Continued
(In grain equivalent)

DESTINATION	1947-48 ²			1948-49 ²			JULY-DECEMBER 1949-50		
	WHEAT 1,000 bushels	WHEAT FLOUR 1,000 bushels	TOTAL 1,000 bushels	WHEAT 1,000 bushels	WHEAT FLOUR 1,000 bushels	TOTAL 1,000 bushels	WHEAT 1,000 bushels	WHEAT FLOUR 1,000 bushels	TOTAL 1,000 bushels
Borneo	-	-	-	-	-	-	-	-	-
Burma	-	-	-	-	-	-	-	-	-
Ceylon	-	-	-	-	-	-	-	-	-
China	-	42	42	560	350	910	-	51	51
Formosa	-	-	-	-	-	-	-	-	-
Hong Kong	-	167	167	(3)	822	822	-	1,264	1,264
India	-	-	-	8,890	3	8,893	-	2	2
Indochina	-	-	-	-	-	-	-	-	-
Indonesia	-	30	30	-	10	10	-	15	15
Japan	-	-	-	-	3	3	329	(3)	329
Korea	-	-	-	-	-	-	-	-	-
Kwantung	-	-	-	-	-	-	-	-	-
Malaya	-	-	-	-	-	-	-	-	-
Manchuria	-	-	-	-	-	-	-	-	-
Pakistan	-	-	-	262	459	721	-	-	-
Philippines	-	655	655	-	2,689	2,689	-	2,603	2,603
Portuguese Asia	-	16	16	-	72	72	-	-	-
Thailand	-	-	-	(3)	45	45	-	64	64
Total	-	910	910	9,712	4,453	14,165	329	3,999	4,328

¹ Calendar year.

² Year beginning July 1.

³ Less than 500 bushels.

Trade of Canada.

TABLE 5.-*Australian Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods*
(In grain equivalent)

DESTINATION	1934-38 AVERAGE ¹			1945-46 ¹			1946-47 ¹		
	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Borneo	-	51	51	-	421	421	-	78	78
Burma	-	64	64	-	2	2	229	297	526
Ceylon	134	777	911	659	6,981	7,640	-	7,861	7,861
China	6,151	2,317	8,468	639	-	639	-	1,800	1,800
Formosa	-	-	-	-	-	-	-	-	-
Hong Kong	46	2,065	2,111	-	1,296	1,296	-	1,517	1,517
India	1,662	25	1,687	9,123	4,368	13,491	6,692	2,277	8,969
Indochina	-	228	228	-	166	166	-	515	515
Indonesia	(2)	3,846	3,846	-	91	91	-	125	125
Japan	6,472	99	6,571	-	73	73	-	202	202
Korea	-	-	-	-	-	-	-	-	-
Kwantung	15	810	825	-	-	-	-	-	-
Malaya	8	2,907	2,915	-	5,407	5,407	-	8,910	8,910
Manchuria	-	2,628	2,628	-	-	-	-	-	-
Pakistan	-	-	-	-	-	-	-	-	-
Philippines	-	1,501	1,501	-	-	-	-	26	26
Portuguese Asia	-	-	-	-	-	-	-	-	-
Thailand	3	437	440	-	-	-	-	-	-
Total	14,491	17,755	32,246	10,421	18,805	29,226	6,921	23,608	30,529

See footnotes at end of table.

Continued -

TABLE 5.-*Australian Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods - Continued*
(In grain equivalent)

DESTINATION	1947-48 ¹			1948-49 ¹			JULY-DECEMBER 1949-50		
	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Borneo	91	-	91	-	-	-	-	-	-
Burma	167	1,001	1,168	-	283	283	-	-	-
Ceylon	-	8,729	8,729	-	8,630	8,630	-	3,738	3,738
China	11	198	209	-	-	-	-	-	-
Formosa	-	-	-	-	-	-	-	-	-
Hong Kong	-	1,010	1,010	-	450	450	-	1,261	1,261
India	21,336	2,705	24,041	16,939	3,297	20,236	18,863	6,443	25,306
Indochina	-	602	602	-	273	273	-	5	5
Indonesia	-	2	2	-	-	-	-	-	-
Japan	-	86	86	1,843	-	1,843	99	-	99
Korea	-	-	-	-	-	-	-	-	-
Kwantung	-	-	-	-	-	-	-	-	-
Malaya	-	6,256	6,256	-	4,452	4,452	-	1,370	1,370
Manchuria	-	-	-	-	-	-	-	-	-
Pakistan	-	-	-	-	-	-	-	-	-
Philippines	-	-	-	-	-	-	-	-	-
Portuguese Asia	-	-	-	-	-	-	-	-	-
Thailand	-	-	-	-	-	-	-	229	229
Total	21,605	20,589	42,194	18,782	17,385	36,167	18,962	13,046	32,008

¹ Year beginning July 1.

² Less than 500 bushels.

1934-38 average, 1945-46, 1946-47, and 1947-48 Overseas Trade and Customs and Excise Revenue.
1948-49, Summary of Australian Statistics, June 1949.
1949-50, Monthly Bulletin of Overseas Trade, December 1949.

TABLE 6.-Argentine Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods
(In grain equivalent)

DESTINATION	1934-38 AVERAGE ¹			1945-46 ²			1946-47 ²		
	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Borneo	-	-	-	-	-	-	-	-	-
Burma	-	-	-	-	-	-	-	-	-
Ceylon	-	-	-	331	-	331	-	-	-
China	1,197	-	1,197	-	-	-	735	-	735
Formosa	-	-	-	-	-	-	-	-	-
Hong Kong	-	-	-	-	-	-	-	-	-
India	-	-	-	-	-	-	-	-	-
Indochina	-	-	-	-	-	-	-	-	-
Indonesia	-	-	-	-	-	-	-	-	-
Japan	496	(3)	496	-	-	-	-	-	-
Korea	-	-	-	-	-	-	-	-	-
Kwantung	-	-	-	-	-	-	-	-	-
Malaya	-	-	-	-	-	-	-	-	-
Manchuria	-	-	-	-	-	-	-	-	-
Pakistan	-	-	-	-	-	-	-	-	-
Philippines	-	-	-	-	-	-	-	-	-
Portuguese Asia	-	-	-	-	-	-	-	-	-
Thailand	-	-	-	-	-	-	-	-	-
Total	1,693	(3)	1,693	331	-	331	735	-	735

See footnotes at end of table.

Continued -

TABLE 6.- Argentine Exports of Wheat and Wheat Flour to Specified Far Eastern Markets for Stated Periods- Continued
(In grain equivalent)

DESTINATION	1947-48 ²			1948-49 ²			July-December 1949-50		
	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL	WHEAT	WHEAT FLOUR	TOTAL
	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels	1,000 bushels
Borneo	-	-	-	-	-	-	-	-	-
Burma	-	-	-	-	-	-	-	-	-
Ceylon	-	-	-	-	-	-	-	-	-
China	-	-	-	-	-	-	-	-	-
Formosa	-	-	-	-	-	-	-	-	-
Hong kong	-	-	-	-	-	-	-	-	-
India	1,837	-	1,837	14,142	-	14,142	-	-	-
Indochina	-	-	-	-	-	-	-	-	-
Indonesia	-	-	-	-	-	-	-	-	-
Japan	-	-	-	-	-	-	1,369	-	1,369
Korea	-	-	-	-	-	-	-	-	-
Kwantung	-	-	-	-	-	-	-	-	-
Malaya	-	-	-	-	-	-	-	-	-
Manchuria	-	-	-	-	-	-	-	-	-
Pakistan	-	-	-	-	-	-	-	-	-
Philippines	-	-	-	-	-	-	-	-	-
Portuguese Asia	-	-	-	-	-	-	-	-	-
Thailand	-	-	-	-	-	-	-	-	-
Total	1,837	-	1,837	14,142	-	14,142	1,369	-	1,369

¹ Calendar years.

² Year beginning July 1.

³ Less than 500 bushels.

1934-38 average, Anuario del Comercio Exterior
1945-46, 1946-47, 1947-48, Grain Bulletin, Commodity Series No. 10, Food and Agriculture Organization, January 1949.
1948-49, 1949-50, American Embassy, Buenos Aires, Argentina.

TABLE 7. *Changes in Average Daily Per Capita Calorie and Protein Value in Food Supply of Specified Far Eastern Countries and the United States, Prewar and 1947-48 and 1948-49.*

COUNTRY	CALORIES			TOTAL PROTEIN			ANIMAL PROTEIN		
	PREWAR	1947-48	1948-49	PREWAR	1947-48	1948-49	PREWAR	1947-48	1948-49
		<i>Number of calories</i>		<i>Grams</i>	<i>Grams</i>	<i>Grams</i>	<i>Grams</i>	<i>Grams</i>	<i>Grams</i>
Burma	2,349	1,986	1,877	73	67.6	65.2	32	26.5	26.4
Ceylon	2,167	1,977	1,918	51	55.9	51.5	11	14.7	13.5
China	2,201	2,115	-	68	65.7	-	5	4.5	-
India and Pakistan	2,021	1,685	¹ 1,570	56	47.7	¹ 43.0	9	7.6	¹ 4.0
Indochina	2,127	2,039	-	55	47.2	-	17	4.7	4.7
Indonesia (Java & Madura) ..	2,040	1,840	-	43	44.4	-	4	3.2	-
Japan	2,268	² 1,670	² 1,795	67	50.1	53.6	12	7.8	10.9
Philippines	2,021	1,770	-	55	48.8	-	25	18.0	-
Thailand	2,173	2,110	2,020	58	54.4	52.5	21	14.1	14.0
United States	3,249	3,244	3,186	88	99.2	95.0	50	63.0	60.3

¹ India only.

² It is believed by SCAP that for staple foods there is an appreciable understatement of production, particularly from home gardens, both in staple foods and vegetables. A nutrition survey conducted by the Ministry of Welfare estimated calorie supplies per person per day at 1,965.

"World Food Survey", FAO, July 5, 1946, p. 38 and "Survey of World Conditions and Prospects", FAO, October 1949, p. 28.

TABLE 8.-Sources of Daily Calorie and Protein Intake in the Food Supply of Specified Far Eastern Countries and the United States Before World War II.

COUNTRY	CALORIES PER DAY								PROTEIN PER DAY			
	TOTAL CALORIES	CEREALS	ROOTS AND TUBERS	SUGAR	FATS	PULSES	FRUITS AND VEGETABLES	MEAT	MILK	TOTAL PROTEIN	ANIMAL	VEGETABLE
			Number of calories						Grams	Grams	Grams	
Burma	2,349	1,589	82	103	184	97	62	203	29	73	32	41
Ceylon	2,167	1,289	34	140	142	403	51	63	45	51	11	40
China	2,201	1,552	112	14	133	260	35	95	—	68	5	63
Formosa	2,153	1,091	434	77	133	102	74	240	2	52	14	38
India and Pakistan	2,021	1,306	37	163	71	210	41	37	156	56	9	47
Indochina	2,127	1,386	143	63	184	96	66	165	24	55	17	38
Indonesia (Java and Madura)	2,040	1,154	490	46	61	178	72	35	4	43	4	39
Japan	2,268	1,559	157	163	41	147	83	107	11	67	12	55
Korea	1,904	1,419	52	15	72	191	44	106	5	70	15	55
Malaya	2,337	1,577	146	100	178	101	66	119	50	57	14	43
Manchuria	2,557	2,002	40	32	72	289	44	66	12	88	5	83
Philippines	2,021	1,115	264	124	130	79	23	218	68	55	25	30
Thailand	2,173	1,341	200	69	180	114	66	179	24	58	21	37
United States	3,249	887	139	515	502	105	210	524	367	88	50	38

"World Food Survey", Food and Agriculture Organization of the United Nations, Washington, D.C., July 5, 1946, p. 38.

